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MENARD COUNTY SOILS

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SOIL REPORT 76

UNIVERSITY OF ILLINOIS
AGRICULTURAL EXPERIMENT STATION

COVER PICTURE

The picture on the cover of this report shows how a part of Menard county appears from the air. People familiar with New Salem State Park will recognize it in the upper left hand portion of the picture. East of the park, Route 97 runs first southwest and then south through the area.

The Sangamon river and bottomland curve across the upper right portion of the photograph. Crescent-shaped areas east of the river are oxbow sloughs, indicating a former channel of the river.

Southwest of the Sangamon are light-colored soils, such as Bogota, Clary, and Sylvan silt loams, which developed under forest vegetation. Still farther southwest, in the lower left part of the picture, are shown darker soils (including Illiopolis silty clay loam and Ipava and Bolivia silt loams), which developed under prairie grass.

(Picture supplied by
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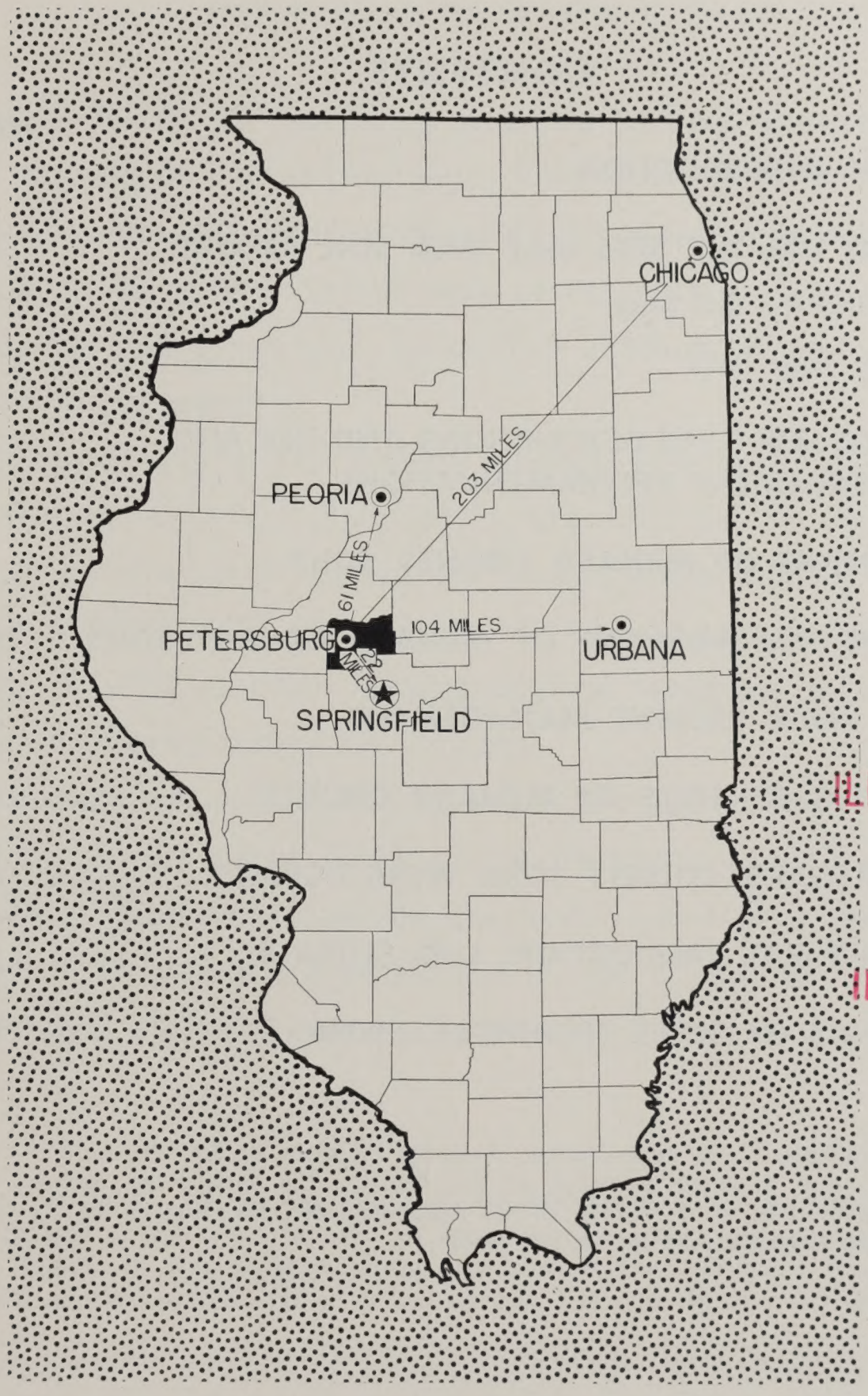

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Menard county lies in west-central Illinois. Petersburg, the county seat, is about 22 miles northwest of Springfield and 61 miles south of Peoria. It is 203 miles southwest of Chicago and 104 miles west of Champaign-Urbana, where the University of Illinois is located.

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Urbana, Illinois November, 1953

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MENARD COUNTY SOILS

By J. B. Fehrenbacher and R. T. Odell

THIS SOIL REPORT has been prepared to help answer these questions about the soils of Menard county: *What soils occur in the county? How should they be managed? How much will they yield?* The soil map shows the extent and location of the various soils of the county. The text includes descriptions of the soil types and discussions of their proper use, management, and crop-producing capacity.

Menard county lies in west-central Illinois. It is bordered on the south by Sangamon county, in which Springfield, the state capitol, is located. Menard is a relatively small county, having an area of about 200,000 acres and a total population in 1950 of 9,639. Petersburg, the county seat and largest town, had a population of 2,325 in 1950. Transportation facilities, including roads and railroads, are well established in this area.

Menard county was established by legislative act in 1839. The area is rich in the history of the early manhood of Abraham Lincoln. The Sangamon river, beloved by Lincoln, traverses the county, and New Salem State Park, 2 miles south of Petersburg, was the site of the village of New Salem, where Lincoln lived and worked for several years.

View looking northeast across the junction of Salt creek with Sangamon river. The main soils on the nearly level river terrace or benchland in the foreground are Worthen and Littleton silt loams. In the bottom along Sangamon river (dense trees, right center) Tice silty clay loam predominates. Hills in background are in Mason county. Fig. 1

HOW TO USE THE SOIL MAP AND SOIL REPORT

Examine the Soil Map

The soil map of Menard county consists of three sheets. On the back of each is indicated the part of the county that it covers.

Meaning of colors and symbols. General soil conditions are indicated by broad color groups on the soil map. Various shades of *blue* and *purple* are used for the dark-colored upland soils, while shades of *yellow* and *brown* are used for upland light-colored soils. Bottomland and terrace soils are indicated by shades of *green,* with two important exceptions: In the bottomlands and terraces along the northern end of the county, *pink* is used for Sawmill silty clay loam, bottom; and *brown* for Proctor silt loam, a terrace soil.

Soil types are subdivided into smaller mapping units on the basis of slope and thickness of remaining surface and subsurface soil. Each mapping unit is indicated by a symbol consisting of two or three parts: *First,* the soil type number; *second,* a small letter indicating the slope group; and *third,* a dash above or below the slope group letter to indicate the thickness of remaining surface and subsurface soil (absence of a dash indicates little or no erosion). For example, $36\bar{c}$ is the symbol used for Tama silt loam (indicated by the "36"), where the slope is 4 to 7 percent (indicated by the "c"), and where there are 2 to 6 inches of surface and subsurface soil (indicated by the bar above the letter). The same color is used on the map for all areas of a given soil type, regardless of the slope or erosion symbol.

Where an area on the map is too small to contain a soil type number, a capital letter is used instead. The various soil type names, soil type numbers and alternate capital letter symbols, and the meanings of the slope group letters and erosion symbols are given in the legend on each map sheet.

In the northern part of Menard county and also in a few areas along the Sangamon river bottom farther south, some of the upland soils are underlain by sandy material at a depth of 3 to 6 feet. This condition is indicated by diagonal blue hatching on the soil map in addition to the regular mapping symbols.

Locating a farm on the map. To help in finding a particular farm or tract of land, many cultural features such as roads, railroads, towns, and farmhouses are indicated. Section boundaries, section numbers, township and range numbers, and physical features such as streams are also shown. If the legal description is known, a tract of land can be easily located by using township and range and section numbers. Otherwise, you can start with a recognized point, such as a town or crossroad, and if you know the distance and direction of a tract of land, you can easily find it.

Study Your Soils

After you have located the tract of land you are interested in and have identified the mapping units on it, turn to the index, page 6, to find where your soil types are described and where the use and management of each mapping unit is discussed.

Entire soil profile is important. In studying the soil type descriptions note particularly that soils are separated into

types on the basis of their characteristics to a depth of 40 inches or more, *not on surface character alone.* The surface layer of one type is frequently little or no different from that of another, and yet the two types may differ widely in agricultural value because of differences in subsurface or subsoil. The nature of the subsoil is important in determining the drainability and water-supplying power of most soils, especially during critical periods of excess rainfall or drouths.

Examining a soil requires "deep" study. Horizons to a depth of 40 inches or more play a large part in how readily a soil drains and how well it holds moisture and plant food. This picture shows stratified layers in Jules silt loam, bottom, Type 28. Upland soils also have layers or horizons, but they have developed in place and are not the result of stream deposition as in Jules. Fig. 2

Variations occur within each type. It is also important to understand that each soil type includes a range in properties, and that the boundaries between soil types are not necessarily sharp. Sometimes types are so intermingled that it is impossible to show them separately on the soil map. Sylvan and Bold silt loam, in many areas of Menard county, are two such intermingled types. They are shown on the map as 19-35 and indicated in the legend as undifferentiated.

Use and management recommendations. The different mapping units on the soil map have been combined into fourteen groups on the basis of similarities in use and management. Recommendations for using and managing each group are given on pages 23 to 42.

Test yields show results of good management. After you have the descriptions of your soil types well in mind and have studied the recommended use and management of each mapping unit on your farm, you can check the effectiveness of your present management program by comparing your present level of production with that obtained in tests. Beginning on page 42 you will find information on yields obtained with a moderately high level of management under farm conditions typical of Menard county. Results from the University of Illinois soil experiment fields that apply to Menard county are also given to show that still higher yields are possible.

Meanings of some technical terms. In the following pages of this report some technical terms have been used that may be unfamiliar to many readers. The terms most likely to need explanation are defined on pages 55 and 56. We suggest a study of this list and frequent reference to it.

INDEX TO SOIL TYPE DESCRIPTIONS AND USE AND MANAGEMENT RECOMMENDATIONS

Look first in the left-hand column for the symbols that match those given for your land on the colored map. (If an area on the map is very small, a capital letter may have been used instead of the soil type number. If so, you can find the corresponding number in the legend on each map sheet.) After finding the symbols you are interested in, continue the line across the table, noting the page on which the soil type is described, the use-and-management group into which the mapping unit falls, and then the page where recommendations for that group are given.

If you have not already done so, turn to page 4 and read there the explanation of these mapping-unit symbols. They will take on meaning and be easier to remember when you see how they are made up.

Mapping unit	*Soil type description, page*	*Use and management*	
		Group No.	*Page*
8-19e, 8-19$\bar{e}$, 8-19$\underline{e}$, 8-19f, 8-19$\bar{f}$, 8-19$\underline{f}$, 8-19g, 8-19$\bar{g}$, 8-19$\underline{g}$	7	11	38
19d, 19$\bar{d}$	10	9	34
19e, 19$\bar{e}$	10	10	36
19f, 19$\bar{f}$, 19g, 19$\bar{g}$	10	11	38
19-35$\bar{c}$, 19-35$\underline{c}$, 19-35$\bar{d}$	10	9	34
19-35$\underline{d}$, 19-35e, 19-35$\bar{e}$	10	10	36
19-35$\underline{e}$, 19-35f, 19-35$\bar{f}$, 19-35$\underline{f}$, 19-35g, 19-35$\bar{g}$, 19-35$\underline{g}$	10	11	38
28a	11	3	27
30f, 30$\bar{f}$, 30g, 30$\bar{g}$	11	11	38
34c	12	6	30
34d	12	7	32
34-35$\bar{c}$, 34-35$\bar{d}$	12	7	32
34-35$\underline{d}$	12	10	36
36a	12	5	29
36b, 36$\bar{b}$, 36c	12	6	30
36$\bar{c}$, 36$\underline{c}$, 36d, 36$\bar{d}$	12	7	32
36$\underline{d}$	12	10	36
37a	12	5	29
37b, 37c	12	6	30
43a	13	2	26
45a	13	4	28
53b, 53$\bar{b}$, 53c, 53$\bar{c}$, 53d, 53$\bar{d}$, 53e, 53$\bar{e}$	14	14	41
54a, 54b, 54$\bar{b}$, 54c, 54$\bar{c}$, 54$\bar{d}$	14	14	41
65a	14	1	24
65-244a	15	1	24
67a	15	1	24
73a	15	5	29
77a	16	5	29
78a	16	3	27
80a	16	5	29
80b, 80c	16	6	30
80$\bar{c}$	16	7	32
80-88b	16	12	39
80-88c, 80-88$\bar{c}$	16	13	40
81a	17	2	26
83a	17	1	24
87a, 87b	17	12	39
87c, 87$\bar{c}$, 87d, 87$\bar{d}$	17	13	40
88b	17	12	39
88c, 88$\bar{c}$, 88d, 88$\bar{d}$	17	13	40
107a	18	1	24
116a	18	4	28
117a	18	3	27
117b	18	8	33
132a	18	3	27
134a, 134b	19	8	33
134c, 134$\bar{c}$, 134d, 134$\bar{d}$	19	9	34
134$\bar{e}$	19	11	38
136a	19	4	28
148a	20	5	29
148b	20	6	30
149a	20	2	26
150a, 150b	20	12	39
150c, 150$\bar{c}$	20	13	40
152a	20	1	24
184a, 184b	21	12	39
186b, 186$\bar{b}$	21	12	39
186c, 186$\bar{c}$, 186d, 186$\bar{d}$	21	13	40
186$\underline{c}$, 186$\underline{d}$, 186e, 186$\bar{e}$, 186$\underline{e}$, 186f, 186$\bar{f}$, 186$\underline{f}$, 186g, 186$\bar{g}$	21	14	41
206a	21	2	26
246a	21	5	29
246b	21	6	30
257a	22	2	26
258b	22	6	30
283b, 283$\bar{b}$	23	8	33
283c, 283$\bar{c}$, 283$\underline{c}$	23	9	34
284a	23	1	24

DESCRIPTION OF MENARD COUNTY SOILS

On the following pages will be found a description of each soil type in Menard county, including general occurrence, formation, and profile characteristics. On the latter point, remember that thicknesses indicated for the surface horizons are for areas that have not been seriously eroded. The types are given in numerical order, as they are also in Table 1, pages 8-9, which shows the area of each type in the county.

For use and management recommendations, turn first to the index on page 6. This will show the management group to which each mapping unit belongs, and the page on which that group is described. (It will also show the page where the soil type is described.)

Hickory loam and Sylvan silt loam undifferentiated (8-19)

In Menard county Hickory loam always occurs in such close association with Sylvan silt loam that the two cannot be shown separately on a small map and so are combined as 8-19. Both are light-colored soils developed under forest vegetation on slopes ranging in steepness from 15 to over 30 percent (Fig. 3). Usually Sylvan, developed from loess, occupies the upper one-half to three-fourths of a steep slope and Hickory occupies the remaining portion, where the loess is absent and the leached, pebbly glacial till is exposed.

The profile of Hickory is described in the paragraph immediately following; while Sylvan, which often occurs alone, is discussed under a separate heading.

Soil profile of Hickory loam (8). This soil represents an exposure or outcrop of the leached, pebbly glacial till that underlies the silty loess cover of Menard county uplands. Where it is still pro-

Sylvan silt loam occupies the upper portion of this eroded hillside and Hickory loam occupies the lower portion. Fig. 3

Table 1. — MENARD COUNTY SOILS: Areas of the Different Types Grouped According to Slope and Erosion

Type No.	Type name	Percent of total area	Area in square miles	Area in acres	Acres of various slope and erosion groups							
					Erosion group	a slope 0-1.5%	b slope 1.5-4%	c slope 4-7%	d slope 7-12%	e slope 12-18%	f slope 18-30%	g slope over 30%
8-19	Hickory loam-Sylvan silt loam, undifferentiated	3.64	11.33	7,250	None to slight	.....	....	....	....	36	103	384
					Moderate	.....	....	....	....	832	3,224	1,266
					Severe	.....	....	....	....	469	844	92
19	Sylvan silt loam	4.52	14.07	9,001	None to slight	.....	....	....	1,072	481	270	68
					Moderate	.....	....	....	3,318	2,491	1,225	76
19-35	Sylvan silt loam-Bold silt loam, undifferentiated	5.18	16.10	10,304	None to slight	.....	....	....	....	37	56	85
					Moderate	.....	....	51	960	878	1,480	454
					Severe	.....	....	208	2,831	2,882	352	30
28	Jules silt loam, bottom	.16	.49	314	None to slight	314	....	....	....	....	....	....
30	Hamburg silt	.08	.25	159	None to slight	.....	....	....	....	....	1	7
					Moderate	.....	....	....	....	....	21	130
34	Tallula silt loam	.87	2.70	1,730	None to slight	.....	....	995	735	....	....	....
34-35	Tallula silt loam-Bold silt loam, undifferentiated	1.94	6.04	3,864	Moderate	.....	....	881	2,872	....	....	....
					Severe	.....	....	....	111	....	....	....
36	Tama silt loam	10.00	31.09	19,896	None to slight	598	8,979	3,999	69	....	....	....
					Moderate	.....	86	5,645	377	....	....	....
					Severe	.....	....	51	92	....	....	....
37	Worthen silt loam	.73	2.27	1,450	None to slight	675	738	37	....	....	....	....
43	Ipava silt loam	14.02	43.60	27,903	None to slight	27,903	....	....	....	....	....	....
45	Denny silt loam	.17	.54	343	None to slight	343	....	....	....	....	....	....
53	Bloomfield fine sand	.53	1.65	1,056	None to slight	.....	13	166	40	10	....	....
					Moderate	.....	7	279	402	139	....	....
54	Plainfield sand	.15	.48	304	None to slight	11	24	39	....	....	....	....
					Moderate	.....	73	146	11	....	....	....
65	Illiopolis silty clay loam	9.67	30.08	19,252	None to slight	19,252	....	....	....	....	....	....
65-244	Illiopolis silty clay loam-Hartsburg silty clay loam, undifferentiated	1.11	3.44	2,205	None to slight	2,205	....	....	....	....	....	....
67	Harpster silty clay loam	.12	.37	238	None to slight	238	....	....	....	....	....	....
73	Huntsville loam, bottom	.99	3.07	1,966	None to slight	1,966	....	....	....	....	....	....
77	Huntsville silt loam, bottom	1.42	4.41	2,823	None to slight	2,823	....	....	....	....	....	....
78	Arenzville silt loam, bottom	1.97	6.12	3,919	None to slight	3,919	....	....	....	....	....	....
80	Alexis silt loam	1.82	5.64	3,613	None to slight	846	2,461	165	....	....	....	....
					Moderate	.....	....	141	....	....	....	....
80-88	Alexis silt loam-Hagener loamy sand, undifferentiated	.19	.59	379	None to slight	.....	101	263	....	....	....	....
					Moderate	.....	....	15	....	....	....	....

Table 1. — Concluded

Type No.	Type name	Percent of total area	Area in square miles	Area in acres	Erosion group	Acres of various slope and erosion groups: a slope 0-1.5%	b slope 1.5-4%	c slope 4-7%	d slope 7-12%	e slope 12-18%	f slope 18-30%	g slope over 30%
81	Littleton silt loam	1.09	3.39	2,172	None to slight	2,172	....	....	....	....	....	....
83	Wabash silty clay, bottom	.16	.51	324	None to slight	324	....	....	....	....	....	....
87	Sumner sandy loam	.80	2.50	1,603	None to slight	22	971	486	76	....	....	....
					Moderate	.....	....	12	36	....	....	....
88	Hagener loamy sand	.39	1.21	776	None to slight	.....	337	357	43	....	....	....
					Moderate	.....	....	31	8	....	....	....
107	Sawmill silty clay loam, bottom	2.09	6.50	4,159	None to slight	4,159	....	....	....	....	....	....
116	Whitson silt loam	.75	2.32	1,485	None to slight	1,485	....	....	....	....	....	....
117	Bogota silt loam	7.74	24.07	15,407	None to slight	1,259	14,148	....	....	....	....	....
132	Starks silt loam	.02	.05	31	None to slight	31	....	....	....	....	....	....
134	Camden silt loam	.49	1.52	976	None to slight	329	476	27	12	....	....	....
					Moderate	.....	....	72	21	39	....	....
136	Brooklyn silt loam	.21	.67	426	None to slight	426	....	....	....	....	....	....
148	Proctor silt loam	2.90	9.03	5,782	None to slight	5,680	102	....	....	....	....	....
149	Brenton silt loam	.76	2.36	1,509	None to slight	1,509	....	....	....	....	....	....
150	Onarga sandy loam	.33	1.03	660	None to slight	332	258	47	....	....	....	....
					Moderate	.....	....	23	....	....	....	....
152	Drummer silty clay loam	1.47	4.57	2,924	None to slight	2,924	....	....	....	....	....	....
184	Roby fine sandy loam	.25	.79	507	None to slight	30	477	....	....	....	....	....
186	Kincaid fine sandy loam	2.03	6.32	4,048	None to slight	.....	471	452	101	43	30	79
					Moderate	.....	49	1,217	620	494	331	17
					Severe	.....	....	13	45	51	35	....
206	Thorp silt loam	.72	2.24	1,431	None to slight	1,431	....	....	....	....	....	....
246	Bolivia silt loam	7.19	22.36	14,309	None to slight	95	14,214	....	....	....	....	....
257	Clarksdale silt loam	1.40	4.35	2,782	None to slight	2,782	....	....	....	....	....	....
258	Sicily silt loam	1.02	3.17	2,030	None to slight	.....	2,030	....	....	....	....	....
283	Clary silt loam	3.21	9.97	6,382	None to slight	.....	3,314	567	....	....	....	....
					Moderate	.....	153	2,007	....	....	....	....
					Severe	.....	....	341	....	....	....	....
284	Tice silty clay loam, bottom	5.27	16.38	10,485	None to slight	10,485	....	....	....	....	....	....
	Mine dump and lime quarry	.01	.05	27	.....	.....	....	....	....	....	....	....
	Water	.42	1.31	839	.....	.....	....	....	....	....	....	....
	Total	**100.00**	**311.00**	**199,043**	.....	**96,568**	**49,482**	**18,733**	**13,852**	**8,882**	**7,972**	**2,688**
	Area of each erosion group											
	None to slight	78.94	245.50	157,120	None to slight	96,568	49,114	7,600	2,148	607	460	623
	Moderate	16.38	50.95	32,610	Moderate	.....	368	10,520	8,625	4,873	6,281	1,943
	Severe	4.25	13.20	8,447	Severe	.....	....	613	3,079	3,402	1,231	122

tected by a good growth of trees, it usually has 3 to 4 inches of brownish-gray loam surface. In unprotected areas erosion has removed this surface, exposing the grayish-yellow loam or gravelly clay loam subsoil. There is not much change for several feet in depth. Hickory is acid in reaction, low in available phosphorus, and low to medium in available potassium.

Sylvan silt loam (19)

Sylvan silt loam is a light-colored soil developed from loess under forest on slopes ranging from 7 to 30 percent or more. In Menard county it occurs not only as a separate type but also as a complex with Hickory loam (8-19) and as a complex with Bold silt loam (19-35).

Soil profile. The surface is yellowish-gray to brownish-gray silt loam 6 to 10 inches thick. The subsurface is a grayish-yellow silt loam. It is usually thin. The subsoil, which begins at a depth of 10 to 14 inches, is a yellowish-brown silt loam or light silty clay loam. Free lime usually is found below a depth of 30 to 35 inches. In cultivated areas the surface frequently has been removed by erosion, and in many places the subsoil also has been lost, exposing the calcareous (limey) loess underneath. Areas in which the calcareous loess is exposed are mapped as 19-35.

Sylvan silt loam and Bold silt loam, undifferentiated (19-35)

In areas shown on the soil map as Sylvan silt loam and Bold silt loam, undifferentiated (19-35), Sylvan usually occupies the upper portion of slopes, while Bold is found on the lower portions or as spots within the Sylvan where sheet erosion has been severe. These soils have developed from loess on slopes ranging from about 5 to over 30 percent (Fig. 4).

Sylvan has already been described above; Bold is described in the following paragraph. (Bold also occurs in a

Sylvan silt loam and Bold silt loam, undifferentiated, are shown in the right foreground. An area of Hamburg silt can be seen in the upper left. Fig. 4

complex with Tallula, which is discussed on page 12.)

Soil profile of Bold silt loam (35). This soil is primarily a calcareous loess, which has been exposed on slopes by erosion. There is no true soil profile developed in this type, although there is often slight evidence of weathering and also in some areas a small accumulation of organic matter. Free lime is present in the surface, which varies in texture from a coarse silt to a silt loam. The color varies from a brownish-yellow in a few areas to yellow or yellowish-gray in others. There is little or no change to a depth of 20 feet or more. This soil is very high in lime but is low in nitrogen and available phosphorus.

Jules silt loam, bottom (28)

Jules silt loam is a light-colored soil found in the bottoms. It is composed of limey sediments washed down from the adjacent hills. Its total area in Menard county is small.

Soil profile. The surface of this soil type is usually yellowish-gray to yellow, although some areas included with this type in Menard county are darker, having a yellowish-brown surface color. Free lime occurs in the surface soil, which ranges from about 1 foot to several feet or more in thickness. The buried soil beneath this calcareous surface soil is usually dark-colored and heavy-textured. Jules silt loam is moderately permeable to water, but it is subject to rather frequent overflow and some areas are inclined to be wet.

Hamburg silt (30)

Hamburg silt is a light-colored soil that has developed on very steep hills (Fig. 5), with slopes varying from about 20 to 100 percent (45 degrees). The native vegetation was bluestem prairie grass, with scattered trees in sheltered coves. This soil is found in the northwestern part of the county near or on the bluffs

A typical area of Hamburg silt. Such hills occur near the bluffs overlooking Sangamon river bottom in the northwestern part of Menard county and are composed of highly calcareous (limey) wind-blown silt known as loess. Fig. 5

overlooking the Sangamon river. It is a minor type in Menard county.

Soil profile. The surface layer consists of an inch or two of coarse silt, which is brown and highly calcareous (limey). In some areas, however, erosion has removed this layer. The rest of the material is a buff or yellow friable coarse silt. It also is highly calcareous, often containing numerous lime concretions and snail shells.

Tallula silt loam (34)

Tallula silt loam is a dark upland soil occurring on slopes ranging from 4 to 12 percent. Along slopes into draws it is often found in association with Bold silt loam (35). Tallula has been formed from loess under a grass vegetation.

Soil profile. The surface soil is a brown to light-brown silt loam 10 to 12 inches thick. The subsurface is a light-brown to yellowish-brown silt loam. It varies considerably in thickness but usually extends to a depth of 15 to 25 inches. Directly below the subsurface is found calcareous (limey) loess. No true subsoil has developed in this soil type, the gray to yellowish-gray silty loess taking its place.

Tallula silt loam and Bold silt loam undifferentiated (34-35)

On some slopes, varying from 4 to 12 percent, Tallula silt loam and Bold silt loam occur in such close association that they were not separated in the survey and are indicated on the soil map as undifferentiated (34-35). In these areas Bold usually occurs as spots within the Tallula where sheet erosion has been severe, although sometimes it may occur as a band occupying the lower portions of slopes, with Tallula occupying the upper portions.

Tallula (34) is described above, and Bold (35) is described on page 11 in connection with the Sylvan silt loam—Bold silt loam complex (19-35).

Tama silt loam (36)

Tama silt loam is a dark upland soil found on slopes varying from 1 to 12 percent. It has developed from loess under grass vegetation.

Soil profile. The surface soil is a brown silt loam about 10 inches thick. The subsurface is brown to light brown and extends to a depth of 16 to 18 inches. The upper 6 to 8 inches of the subsoil is a yellowish-brown light silty clay loam. Between about 24 and 36 inches in depth, the subsoil is a yellowish-brown silty clay loam, mottled with yellow and some orange. It also has some rusty iron splotches. Below 36 inches the material becomes more friable, and below 45 to 55 inches carbonates usually are found. Tama is usually medium to low in available phosphorus and high in available potassium.

Worthen silt loam (37)

Worthen silt loam is a dark soil found on the benchland along the Sangamon river bottomlands (Fig. 6). It has developed under grass on slopes ranging from ½ to 7 percent. The material from which this soil has been formed was "bluff

A wide expanse of Worthen silt loam and Littleton silt loam on one of the terrace or benchland areas along Sangamon river bottom. Fig. 6

wash" from adjacent silty uplands. The most common occurrence of Worthen is near the base of the bluffs. It is associated with Littleton silt loam (81), but has had better natural drainage.

Soil profile. The surface soil is a brown to light-brown friable silt loam 8 to 10 inches thick. The subsurface is a light-brown silt loam. The subsoil, which begins at a depth of 16 to 20 inches, is a light-brown to yellowish-brown heavy silt loam or a light silty clay loam. Worthen is a youthful soil, with only a small accumulation of clay in the subsoil.

Ipava silt loam (43)

Ipava silt loam is a dark upland soil found on slopes of ½ to 1½ percent. It has developed under a grass vegetation and occurs in association with Bolivia silt loam (246) and Illiopolis silty clay loam (65).

Soil profile. The surface soil is a very dark-brown silt loam 10 to 14 inches thick. The subsurface is a dark-brown heavy silt loam. The subsoil, which begins at 16 to 20 inches, is a yellowish-gray heavy silty clay loam mottled with pale yellow and stained brown with organic matter on the aggregate faces. Free lime usually is found at a depth of 40 to 50 inches. Ipava is usually medium in available phosphorus and high in available potassium.

Denny silt loam (45)

Denny silt loam is a grayish soil found in small depressions near drainageways in association with Ipava silt loam (43) and Illiopolis silty clay loam (65). It is of limited extent in Menard county, only 343 acres being shown on the soil map. Many other areas are too small to be shown.

Soil profile. Denny has a grayish-brown silt loam surface, 7 to 9 inches thick, and a dull-gray silt loam subsurface. The subsoil, which starts at a depth of 15 to 20 inches, is a plastic silty clay, very slowly permeable to water. It is predominantly gray but is mottled with brown and yellow. Denny is acid and is usually low in available phosphorus and medium in available potassium.

Bloomfield fine sand (53)

Bloomfield fine sand occurs in the upland as a broken belt along the bluffs. It was formed from wind-blown sands when timber, chiefly black oak, grew there. The slopes on which this soil is found range in steepness from 2 to 18 percent.

The total area of Bloomfield fine sand in Menard county is about 1,056 acres. A few small areas of Kincaid fine sandy loam (186) are included with this type.

Soil profile. The surface inch or two in virgin areas is dark because of the accumulation of leaf mold. Under cultivation this dark surface quickly disappears, and the color becomes brownish yellow. The texture of the surface ranges from a loamy fine sand to a fine sand.

The subsurface, beginning at about 8 or 10 inches and extending to 2 feet, is a sand or fine sand, yellow in color. Between depths of 2 and 4 feet there is loose fine sand. Below this there are usually thin, broken bands of reddish-brown clay and iron accumulation in the sand, and below 8 feet the sandy material often is calcareous.

Plainfield sand (54)

Plainfield sand is found mainly on the benchland along the westward-flowing portion of Sangamon river, in the northern part of the county. This sand was deposited in glacial times while the ice was melting and the present benchland was under water. Some of the sand was reworked by the wind, no doubt, but there is very little evidence of dunes in this area. The natural vegetation under which this soil developed was a hardwood forest, the dominant species being black oak, with a scattering of red oak. The slopes vary from 1 to about 12 percent.

Soil profile. The surface is a loose, medium sand. In undisturbed areas it is stained a light brown by leaf mold, but under cultivation the color soon becomes brownish yellow. Blowouts are not common in this type at present in Menard county. Very little change occurs with depth, except that below 70 inches there are often thin, broken bands of reddish-brown accumulations of clay and iron.

Illiopolis silty clay loam (65)

Illiopolis silty clay loam is a very dark soil found on the upland — either on nearly level areas or in slight depressions. It has developed from loess (a silty wind-blown deposit) under poor natural drainage and a grass vegetation. During soil development, weathering so changed the silty nature of the parent material that Illiopolis is one of the "heavier" soils of Menard county. It is known locally by farmers as "black gumbo," and the difficulties involved in plowing or cultivating it when it is a little too wet or a little too dry are generally recognized.

A few small depressional areas occur on which crops frequently drown out or do poorly because of excess moisture. These areas are similar to the rest of the type except that they have a heavier texture. Usually they are a silty clay instead of a silty clay loam. They are not shown on the soil map because they are small and not very common in Menard county.

Besides being shown by itself, Illi-

opolis is also indicated on the soil map as a complex with Hartsburg silty clay loam (65-244).

Soil profile. The surface of this type is a black silty clay loam about 15 inches thick. It is high in organic matter and plant nutrients and only slightly acid. Under natural conditions the surface is well granulated and spongy. After it has been farmed many years, particularly where little organic matter has been turned under, the granulation in the surface soil is considerably less. The subsurface is a very dark grayish-brown silty clay loam. The subsoil, beginning at a depth of 18 to 20 inches, is a silty clay loam. For the most part it has a mixed gray and yellow color, with structure particles coated dark brown by organic matter. Free lime occurs below 35 or 40 inches in depth.

Illiopolis silty clay loam and Hartsburg silty clay loam undifferentiated (65-244)

Illiopolis silty clay loam and Hartsburg silty clay loam are dark upland soils developed under swampy prairie vegetation on nearly level to depressional areas. Besides occurring in an undifferentiated complex with Hartsburg, Illiopolis occurs by itself in many areas and is described above. Hartsburg (244) is described below.

Soil profile of Hartsburg silty clay loam. The surface is a dark brown to grayish-black silty clay loam 8 to 12 inches thick; and the subsurface is a grayish-brown silty clay loam. The subsoil, which begins at a depth of 15 to 18 inches, is a brownish-gray silty clay loam mottled with yellow. Lime concretions may or may not be present on the surface but commonly are found in the subsoil at depths of 25 or 30 inches. Below 30 inches the subsoil becomes more silty, is mixed yellow and gray in color, and is calcareous.

Harpster silty clay loam (67)

Harpster silty clay loam is a very dark soil. Not an extensive type in Menard county, it is found mostly on the bench-land along Salt creek. It also occurs in a few other areas that are too small to be shown on the map.

Soil profile. The surface, which is 8 to 12 inches thick, is a very dark gray or black silty clay loam. It is calcareous and usually contains many fragments of snail shells. Subsurface and subsoil are both silty clay loams. The subsurface is a very dark brownish gray, while the subsoil is a gray mottled with yellow.

Huntsville loam, bottom (73)

Huntsville loam is a dark soil found mostly near the stream channels of Salt creek and Sangamon river. It is derived from recent sediment deposited by running water and is one of the most variable types in Menard county.

Soil profile. The surface usually is a brown to dark-brown loam. It is, however, quite variable from area to area and includes, besides loam, such textures as coarse sandy loam, silt loam, and gravelly clay loam. The deeper layers of this type also vary in texture and in thickness. A few small areas have a gravel layer near enough the surface to be drouthy. The underlying material (from depths of about 20 to 35 inches)

is usually brown to yellowish-brown, indicating much better natural drainage than that found in Sawmill silty clay loam (107) and Wabash silty clay (83).

Huntsville silt loam, bottom (77)

Huntsville silt loam is a dark-colored soil found, for the most part, in the bottomlands of small streams. This soil has been formed from sediments washed into the bottomlands from the rolling, dark-colored upland soils.

Soil profile. The surface layer of this type usually is a very dark-brown silt loam. It often is as much as 24 inches thick. A few small areas included with this type have a rather light-colored silty covering. No true subsoil has developed, but it is not uncommon to find a buried black silty clay loam soil below a depth of 40 inches. Huntsville is seldom acid. Very little if any limestone is required for good crop growth.

Arenzville silt loam, bottom (78)

Arenzville silt loam is a light-colored soil found in the bottomlands along the small streams. It has been formed from sediments recently washed from light-colored upland soils onto dark bottomland soils. The total area of this soil in Menard county is 3,919 acres.

Soil profile. The surface of this type varies from a brownish-yellow to a brownish-gray silt loam. A few small areas have considerable sand mixed with the silty surface. It is normally sweet, and many small areas contain free lime. The thickness of this light-colored surface layer varies from about 15 inches to several feet. The soils buried under the surface layer vary from a dark-brown silt loam to a black silty clay loam.

Alexis silt loam (80)

Alexis silt loam is a dark to moderately dark soil found on the terraces or benchlands along Salt creek. It has developed under grass on slopes ranging from 1 to 7 percent. It occurs in association with Proctor silt loam (148) and in an undifferentiated complex with Hagener loamy sand (80-88). It differs from Proctor in that it has a lighter colored surface and sand occurs at shallower depths.

Soil profile. The surface soil is a light-brown silt loam 10 to 12 inches thick. The subsurface is also a light-brown silt loam. The subsoil, which begins at a depth of 15 to 18 inches, is a yellowish-brown silty clay loam. Sand or gravel occurs at depths of 35 to 40 inches.

Alexis silt loam and Hagener loamy sand undifferentiated (80-88)

Where Alexis silt loam and Hagener loamy sand occur in very close association, they are shown on the soil map as an undifferentiated soil complex numbered 80-88.

They are dark to moderately dark soils developed under prairie grass. Besides occurring in the 80-88 soil complex, they also occur separately in other areas. Alexis silt loam (80) is described above and Hagener loamy sand (88) is decribed on page 17.

Littleton silt loam (81)

Littleton silt loam is a dark soil developed in association with Worthen silt loam on the benchland along Sangamon river (Fig. 6). The two soils have been formed from similar material ("bluff wash"), but Littleton has had poorer natural drainage. It is usually found on lower, flatter areas than Worthen, and farther from the bluffs. Slopes range from ½ to 1½ percent. The natural vegetation under which this soil developed was prairie and swampy prairie grass.

Soil profile. The surface soil is a dark-brown to brown silt loam 10 to 12 inches thick; the subsurface is a brown silt loam. The subsoil begins at a depth of 18 to 22 inches. It is usually a heavy silt loam, but in places may be a light silty clay loam. The slight accumulation of clay in the subsoil is an indication of the youthfulness of this soil. The subsoil is a grayish brown to a depth of about 35 inches; below this, it may become more yellowish brown.

Wabash silty clay, bottom (83)

Wabash silty clay is a very dark soil found in sloughs and old, partially filled channels in the flood plains of Salt creek and Sangamon river. It has been formed from fine-textured sediment deposited in slack water, to which were added large amounts of organic matter. The natural drainage of this soil is very poor.

Soil profile. The surface of Wabash silty clay is a black plastic silty clay 12 to 18 inches thick. It is a difficult soil to work unless moisture conditions are just right. Beneath the surface is a dark-gray silty clay or clay; below 24 inches this material is mottled with pale orange and rusty brown.

Sumner sandy loam (87)

Sumner sandy loam is a dark to moderately dark soil found in upland sandy areas throughout the northern third of Menard county and also on the benchlands along Sangamon river and Salt creek. It has developed under grass on slopes ranging from 1 to 12 percent.

Soil profile. The surface soil is a brown to light-brown sandy loam 14 to 18 inches thick. The subsurface is a light-brown sandy loam and extends down to about 30 inches. Below this are 10 to 15 inches of dark yellowish-brown loamy sand. A brownish-yellow sand is found below 40 or 45 inches.

Hagener loamy sand (88)

Hagener loamy sand is a dark to moderately dark soil occurring on upland ridges throughout the northern third of Menard county and also on the benchlands along Sangamon river and Salt creek. It has developed under grass on slopes ranging from 2 to 12 percent.

Hagener loamy sand, when cultivated, is subject to wind erosion. Many small areas on ridges of this type have been severely eroded. Wind has picked up the dark-colored sand from these areas and scattered it over the sides of the ridges or beyond them, exposing light-colored, drouthy sand that is sometimes calcareous. Productive capacity of these eroded areas is greatly reduced.

Soil profile. The surface is a brown to light-brown loamy sand 14 to 22 inches thick. The subsurface is also a loamy sand but is not quite so dark as the surface. It usually extends to a depth of 25 or 30 inches. Below this, for several feet, there is loose, incoherent brownish-yellow sand. Gray calcareous sand is found at widely varying depths, usually below 6 feet in uneroded areas.

Sawmill silty clay loam, bottom (107)

Sawmill silty clay loam is a very dark soil found on the flood plains of Salt creek and Sangamon river. The most extensive areas are along Salt creek and the westward-flowing portion of Sangamon river in the north side of the county. It is most commonly found away from the stream channels, near the benchland which lies just below the upland. In this position it has somewhat poorer natural drainage than Tice silty clay loam (284), which commonly occurs nearer the stream channels.

Soil profile. The surface is a black silty clay loam 15 to 20 inches thick. It tends to have a granular structure, unless poorly farmed, and is high in plant nutrients. Rarely is it in need of lime. The subsurface and subsoil are also silty clay loams. With depth the color becomes dark gray, and below 24 inches "rusty iron" mottling may be found.

Whitson silt loam (116)

Whitson silt loam is a light-colored upland soil developed under forest on areas ranging from slightly depressional to areas having as much as 1 percent slope. Depressional areas of this soil are most common in the northern third of the county, where the soils have a sandy substratum. It occurs in association with Bogota silt loam (117) and Clary silt loam (283).

Soil profile. The surface is a gray silt loam 5 to 7 inches thick. The subsurface is a light-gray silt loam. The subsoil, beginning at depths of 12 to 16 inches, is a yellowish-gray heavy silty clay loam. It is moderately compact and plastic and slowly permeable to water. Brown or black iron pellets, called "buckshot," are common throughout the profile.

Bogota silt loam (117)

Bogota silt loam (Fig. 7) is a light-colored upland soil developed under forest on slopes ranging from ½ to 4 percent. It occurs in the northern third of Menard county, where it has a sand substratum, as well as in the southern part of the county, where the sand substratum usually is absent.

Soil profile. The surface is a yellowish-gray to brownish-gray silt loam. The subsurface is a grayish-yellow silt loam. The subsoil, which begins at depths of 12 to 15 inches, is a yellowish-brown silty clay loam mottled with gray and rusty brown. It is moderately slowly permeable to water.

Starks silt loam (132)

Starks silt loam is a light-colored soil found in nearly level or depressional areas on the benchlands or terraces along Sangamon river and Salt creek. It has developed under forest vegetation. A minor type in Menard county, it occurs in association with Camden silt loam (134).

Soybeans have been planted in rows on Bogota silt loam (background) and drilled on the more rolling portion of the field (foreground), which is Sylvan and Bold silt loam. Fig. 7

Soil profile. The surface soil is a gray to yellowish-gray silt loam 5 to 7 inches thick. In forested areas the surface 2 or 3 inches are brownish gray, but the darker organic matter soon disappears under cultivation. The subsurface is a light-gray silt loam. The subsoil, beginning at depths of 14 to 16 inches is yellowish-gray heavy silty clay loam mottled with rusty brown. It is moderately compact and plastic and moderately slowly permeable to water. Starks is medium acid in reaction, usually low in available phosphorus, and medium to high in available potassium.

Camden silt loam (134)

Camden silt loam is a light-colored soil found on the benchlands or terraces along Sangamon river and Salt creek. It has developed under forest on slopes ranging from ½ to as much as 15 percent, although most of it has developed on slopes between ½ and about 5 percent.

Soil profile. The surface soil is a yellowish-gray to brownish-gray silt loam 5 to 8 inches thick. The subsurface is a yellowish-gray silt loam. The subsoil begins at a depth of 14 to 16 inches and is a brownish-yellow silty clay loam with a few gray and rusty brown mottlings in the lower part. Camden is medium acid in reaction, and low to medium in available phosphorus and available potassium.

Brooklyn silt loam (136)

Brooklyn silt loam is a light-colored soil found in depressional areas on the benchlands or terraces along Sangamon river and Salt creek. It has developed under grass in shallow depressions that lacked surface drainage.

Soil profile. The surface is a brownish-gray to gray silt loam 7 to 9 inches thick. In many areas there are deposits of silty material that have been washed from surrounding higher land. The subsurface is a light-gray silt loam. The subsoil, which begins at depths of 18 to 22 inches, is a gray, compact and plastic silty clay mottled with pale yellow and rusty brown. It is very slowly permeable to water.

Proctor silt loam (148)

Proctor silt loam is a dark soil developed under grass on slopes of ½ to 4 percent on the benchlands or terraces along Salt creek. It occurs in association with Brenton silt loam (149) and Alexis silt loam (80). Proctor differs from Alexis in that it is darker and sand doesn't occur so close to the surface.

Soil profile. The surface soil is a dark-brown to brown silt loam 10 to 14 inches thick. The subsurface is a brown to light-brown silt loam. Below 16 or 18 inches is the subsoil, a yellowish-brown silty clay loam. In some places the lower part of the subsoil has gray mottlings. Sand or gravel is common below 50 inches.

Brenton silt loam (149)

Brenton silt loam is a dark soil developed under grass on slopes ranging from 0 to 1 percent on the benchlands or terraces along Salt creek. It occurs in association with Proctor silt loam (148) and Drummer silty clay loam (152).

Soil profile. Brenton has a very dark-brown silt loam surface, 10 to 15 inches thick, and a brown silt loam subsurface. The subsoil, which begins at depths of 17 to 20 inches, is brownish-gray silty clay loam mottled with pale yellow. The structure particles of the subsoil have dark-brown coatings. Free lime is sometimes found at depths of 40 to 45 inches. Sand or gravel occasionally is found by 60 inches, but in general the sand or gravel is too deep to have had much influence on this soil.

Onarga sandy loam (150)

Onarga sandy loam is a dark soil found on the benchlands along Salt creek and Sangamon river. It has developed under grass on slopes ranging from ½ to 7 percent.

Soil profile. The surface is a brown to light-brown sandy loam 8 to 12 inches thick. The subsurface is also a sandy loam but is somewhat lighter in color than the surface. The subsoil, which begins at a depth of 16 to 20 inches, is a brownish-yellow sandy clay loam. Below 30 inches the subsoil gradually becomes lighter textured, and at a depth of about 40 inches yellowish sand is commonly found.

Drummer silty clay loam (152)

Drummer silty clay loam is a very dark soil found on nearly level areas on the benchlands or terraces along Sangamon river and Salt creek. It has developed under grass and occurs in association with Brenton silt loam (149) and Proctor silt loam (148).

Soil profile. The surface is a black silty clay loam about 15 inches thick. The subsurface is a dark-brown silty clay loam. The subsoil, which starts at depths of 18 to 20 inches, is a dark-gray silty clay loam with pale yellow mottling and with dark-brown coatings on the structure particles. Free lime is sometimes found at 45 to 50 inches. Sand or gravel seldom is found at depths of less than 5 or 6 feet.

Roby fine sandy loam (184)

Roby fine sandy loam is a light-colored soil usually found on the upland close to the bluffs along the Sangamon river. It has developed in slightly depressional to gently sloping areas. Slopes range from 0 to about 4 percent. The native vegetation was a mixed hardwood forest.

Soil profile. The surface is a yellowish-gray to brownish-gray fine sandy loam to sandy loam 5 to 7 inches thick. The subsurface is a yellowish-gray fine sandy loam. Beginning at a depth of 16 to 20 inches is the subsoil, which is normally a fine sandy clay loam. It is yellowish-gray, mottled with rusty brown.

Many small areas mapped with this type have a layer of sand at a depth of 15 to 30 inches instead of the normal sandy clay loam subsoil. It was not possible to show these areas on the map.

Kincaid fine sandy loam (186)

Kincaid fine sandy loam is a light-colored soil found mostly on the upland close to the bluffs along Sangamon river. There are also a few areas on the upland along Salt creek. This soil occurs on a very wide range of slopes in Menard county, from about 3 to 30 percent or more. It has developed from coarse loess, a wind-blown silty deposit, mixed with some fine sand. The native vegetation was a mixed hardwood forest. Many areas are severely eroded, the surface and subsurface soil being entirely removed.

Soil profile. The surface of this type varies in color from brownish gray to yellowish gray and in texture from loamy fine sand to fine sandy loam. It is 6 to 9 inches thick. The subsurface is a grayish-yellow fine sandy loam. Most of this soil type has a subsoil of reddish-yellow or yellowish-brown fine sandy clay loam, which begins at a depth of 14 to 20 inches. However, scattered areas, which are too small to be shown on the soil map, do not have this subsoil.

Thorp silt loam (206)

Thorp silt loam is a medium-dark soil found on the benchlands or terraces along Sangamon river and Salt creek and in the upland in the northern third of the county, where the soils have a sand substratum. It has developed under a grass cover, usually in shallow depressions that have slopes less than ½ percent.

Soil profile. The surface is a grayish-brown to brownish-gray silt loam 6 to 8 inches thick. The subsurface is a brownish-gray to gray silt loam. The subsoil, which begins at depths of 16 to 18 inches, is a moderately compact and plastic gray silty clay loam to silty clay mottled with pale yellow and rusty brown. It is moderately slowly permeable to water.

Bolivia silt loam (246)

Bolivia silt loam is a dark upland soil developed under grass on slopes ranging from 1 to 4 percent (Fig. 8). It occurs in association with Ipava silt loam (43), Illiopolis silty clay loam (65), and Illiopolis silty clay loam and Hartsburg silty clay loam undifferentiated (65-244).

Where Bolivia is associated with the 65-244 complex on slopes of less than 1½ percent, the subsoil is usually calcareous

Red clover growing on Bolivia silt loam. Turning under legume and grass crops adds needed organic matter to this soil. Note the neat farmstead in background. Fig. 8

below 30 inches, and such areas appear to be somewhat better drained than the average of the type.

Soil profile. The surface soil is a dark-brown to brown silt loam 9 to 12 inches thick. The subsurface is a brown silt loam. The subsoil, which begins at a depth of 16 to 18 inches, is a grayish-brown silty clay loam mottled with yellow. Its structure particles are coated dark brown. Below 45 to 50 inches free lime commonly is found.

Clarksdale silt loam (257)

Clarksdale silt loam is a medium-dark upland soil developed under a mixed grass and tree vegetation on slopes of ½ to 1½ percent. It is intermediate in character between Whitson silt loam (116) and Ipava silt loam (43).

Soil profile. The surface is a grayish-brown to brownish-gray silt loam 8 to 10 inches thick. The subsurface is a brownish-gray to gray silt loam. The subsoil, which begins at depths of 15 to 18 inches, is a moderately slowly permeable, yellowish-gray, heavy silty clay loam. It is mottled with rusty brown and has thick dark coatings on the structure particles.

Sicily silt loam (258)

Sicily silt loam is a moderately-dark upland soil developed under a mixed grass and tree vegetation on slopes of 1½ to 4 percent. It is intermediate in character between Bolivia silt loam (246) and Bogota silt loam (117).

Soil profile. The surface soil is a light-brown to grayish-brown silt loam 8 to 10 inches thick. The subsurface is a brownish-gray silt loam. The subsoil, beginning at depths of 14 to 17 inches, is a grayish-brown to yellowish-brown silty clay loam which is mottled with yellow and gray and has dark coatings on the structure particles.

Clary silt loam (283)

Clary silt loam is a light-colored soil developed under forest on slopes of 2 to 7 percent. It occurs in association with Sylvan silt loam (19).

Soil profile. The surface soil is a brownish-gray to yellowish-gray silt loam 5 to 7 inches thick. The subsurface is a grayish-yellow silt loam. The subsoil, which begins at depths of 12 to 15 inches, is a heavy silty clay loam. Though primarily yellowish-brown, the subsoil often has a slight reddish-brown cast.

Tice silty clay loam, bottom (284)

Tice silty clay loam is a dark soil found on the flood plains of Salt creek and Sangamon river. In Menard county it occurs nearer the stream channels or in narrower stretches of bottomland than does Sawmill silty clay loam (107). Where these two soils occur side by side in the same stretch of bottomland, one frequently merges into the other without a sharp separation. In general the surface layer of Tice silty clay loam is not as dark nor as deep as that of Sawmill silty clay loam. Tice silty clay loam also has had better internal drainage. It has more yellow and less gray in the subsoil.

Soil profile. The surface is a dark-brown silty clay loam 10 to 15 inches thick. From a depth of about 15 to 24 inches the soil is a dark grayish-brown silty clay loam and below 24 inches it is grayish-brown silty clay loam mottled with yellow. This soil seldom is acid and rarely requires liming.

USE AND MANAGEMENT OF MENARD COUNTY SOILS

After you have studied the descriptions of the soil types on your farm, the next question probably is, "What is the best use and management for them?" To answer this, you'll need to consider not only soil type, but also the slope of the land and the amount of erosion that has taken place. As already mentioned (page 4), these factors were all taken into account when the mapping units were marked out on the soil map. These mapping units, rather than soil type alone, form the basis for the recommendations in this section.

The different mapping units have been combined into 14 groups, according to similarities in their main use and in the problems that are normally encountered in managing them. Not all mapping units in a group will require exactly the same management or soil treatment, however, nor will crop yields be precisely the same. Recommendations must therefore be general. Since this is true, and also since recommendations may change as new information becomes available, you are urged to consult your farm adviser and the local soil conservation personnel for specific, detailed recommendations for the soils on your farm.

Management of Group 1 Soils

Dark-colored, poorly to very poorly drained silty clay loam to silty clay soils, with silty clay loam to silty clay subsoils: occurring on "a" (0 to ½ percent) slopes with no erosion. This group of soils includes the following mapping units:[1]

65a	67a	107a	284a
65-244a	83a	152a	

Drainage. Adequate drainage is one of the first requirements of good management on these soils. They are all nearly level, low-lying, heavy-textured, and naturally poorly to very poorly drained. Fortunately all except Type 83 can be tiled satisfactorily if suitable outlets can be provided. Soil Type 83 is a silty clay or clay and can best be drained by open ditches since tile function very slowly in it.

Where Types 65 and 67 are underlain by sand (areas indicated by diagonal blue hatching on soil map) and tile are laid deep enough to be in it, there is danger that the sand will fill the tile or the tile will wash out of line. In most areas of these soils, however, the tile will not have to be laid as deep as the sand.

Soil Types 83, 107, and 284 are bottomland types which are in danger of flooding unless they are protected by levees (Fig. 9). Sometimes these soils occur in swampy areas or old sloughs in the bottoms. This condition is indicated by a swamp symbol on the soil map. It is impractical at the present time to attempt drainage on many of these sloughs.

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 65,** Illiopolis silty clay loam, *page 14;* **Types 65-244,** Illiopolis silty clay loam — Hartsburg silty clay loam, undifferentiated, *page 15;* **Type 67,** Harpster silty clay loam, *page 15;* **Type 83,** Wabash silty clay, bottom, *page 17;* **Type 107,** Sawmill silty clay loam, bottom, *page 18;* **Type 152,** Drummer silty clay loam, *page 20;* and **Type 284,** Tice silty clay loam, bottom, *page 23.*

Organic matter and nitrogen. Although these soils are dark-colored and rich in organic matter, it is important to maintain a fresh supply by plowing under sod crops at regular intervals. Decaying organic matter not only supplies nitrogen for the grain crops but also helps to maintain the loose, well-granulated structure necessary for penetration of water, air, and plant roots. Commercial nitrogen may often be used profitably for second-year corn after clover on these soils.

Maintenance of good structure. Much can be done to keep good structure by cultivating or working these soils only when moisture conditions are right. If worked when too wet, these heavy-textured soils tend to be cloddy and to develop a compacted zone just below plow depth. Also, the frequent impact of farm machinery causes the granules in the upper few inches to break down. This increases the tendency of these soils to pack and seal over so that water and air can't enter easily. Fall plowing is desirable, particularly where there is a tendency to plow these soils when they are too wet in the spring.

Growing deep-rooting legumes and grasses is one of the best ways to improve and maintain good structure within plow depth and to loosen up compacted zones just below plow depth.

Mineral plant-food deficiencies. With a few exceptions these soils are fairly well supplied with the mineral plant-food elements. Some of these soils may require small amounts of limestone. Soil Type 67, however, usually has more than enough lime and shouldn't receive additional amounts. Harpster (67) is low in available potassium and will usually respond well to potash treatment. Some response to phosphate treatment can also

Drowning out of crops and scouring by floodwaters, particularly on areas not protected by levees, are two very important problems to consider on bottomland soils such as Tice, Sawmill, and Wabash. Fig. 9

be expected, particularly when superphosphate is applied to wheat. Soil tests should be made and used as guides in applying soil treatments.

Erosion control. Erosion is generally not a problem on these soils. On the three bottomland Types 83, 107, and 284, there may often be stream bank cutting and scouring (Fig. 9).

Suitable crop rotations. The soils of this group are quite durable and can be farmed intensively (Fig. 10). However, to keep up the organic-matter and nitrogen content of the soil and to main-

Corn and soybeans do well on the soils of Management Group 1. However, to maintain good soil structure and to supply nitrogen, legumes or grass-legume mixtures should be grown regularly in the crop rotation. Fig. 10

tain good soil structure, a standover legume or legume-grass sod crop should be grown on each field once every four years, or a legume catch-crop once every three years.

Where the three bottomland Types, 83, 107, and 284, are not protected by levees, they receive sediment from flood water each year. Since small-grain and clover crops are frequently drowned out, these soils are used more intensively for summer crops such as corn or soybeans.

Some of these bottomland areas, particularly those along Salt creek and Sangamon river outside the levees, have remained in timber. They are among the most productive soils in the state for timber trees. They can best be managed for crops of cottonwood, soft maple, ash, and elm.

Management of Group 2 Soils

Dark to moderately dark-colored, poorly-drained silt loam soils with silt loam to silty clay loam subsoils: occurring on "a" (0 to 1 ½ percent) slopes with very slight or no erosion. This group of soils includes the following mapping units:[1]

43a 81a 149a 206a 257a

Drainage. Artificial drainage is required on these soils. Soil Types 43, 81, and 149 tile readily while Types 206 and 257 tile slowly. In fact, some areas of Types 206 and 257 have such slowly permeable subsoils that it is questionable whether they should be tiled at all.

Type 206 occurs in depressional areas as well as on slight slopes. A few of these depressional areas of Type 206 in Menard county are so low that they are swampy. They are indicated on the soil map by swamp symbols.

Sometimes special precautions are necessary in areas where Types 43, 206, and 257 are underlain by sand (areas indicated by diagonal blue hatching on the soil map). Although tile will not ordinarily have to be laid as deep as the sand, this is sometimes necessary where the tile line must cross a ridge. In such instances if the length is not too great, trouble with sand filling the tile or the tile washing out of line can often be prevented in this way: Dig out a few extra feet of the sand and fill both below and around the tile with the silty surface and subsoil material from the soil profile above the sand layer.

Organic matter and nitrogen. The soils of this management group are not as heavy as those of Management Group 1 and their physical condition is not as critical. Nevertheless it is essential to add organic matter regularly to insure a well-granulated structure. Leguminous organic matter also serves as a valuable source of nitrogen. If additional nitrogen is needed it may be provided by applying suitable commercial fertilizers.

Maintenance of good structure. Since soils of this group, except the swampy areas of Type 206, have some surface drainage and dry out faster than the soils of Management Group 1, they are not so likely to be worked when they are too wet. If this does happen, however, the granulated structure in the surface soil is destroyed and a compacted zone formed just below plow depth.

As mentioned above, organic matter needs to be added to these soils to help maintain good structure.

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 43,** Ipava silt loam, *page 13;* **Type 81,** Littleton silt loam, *page 17;* **Type 149,** Brenton silt loam, *page 20;* **Type 206,** Thorp silt loam, *page 21;* and **Type 257,** Clarksdale silt loam, *page 22.*

Mineral plant-food deficiencies. These soils should be tested to determine how much, if any, limestone, phosphate, and potash should be applied. Types 206 and 257 usually have the greatest need for soil treatments.

Erosion control. Ordinarily erosion is not serious on these soils. On areas which approach 1½ percent slope, the upper limit for this group, there may be some erosion, particularly if water from higher land runs across the areas or if the slopes are long. For such a condition a grassed waterway or a diversion terrace to carry the water to a waterway may be necessary. The use of a good crop rotation as well as the other management practices mentioned above will usually prevent significant soil losses because of erosion from these soils.

Suitable crop rotations. Crop rotations which include sod crops (legumes or legume-grass mixtures) one year out of four or a legume catch crop every third year may be used on these soils. Such a rotation as corn, corn, oats, clover is one possibility. Rotations of corn, soybeans, wheat (legume catch crop) or corn, corn, oats (legume catch crop) are others that may be used. Soil Types 206 and 207 are not so dark as the others of this management group and are not quite so productive. Wherever possible it may prove more profitable to keep these two soils in a rotation that includes a standover legume.

Management of Group 3 Soils

Light-colored, moderately to poorly drained silt loam soils with silt loam to silty clay loam subsoils: occurring on "a" (0 to 1½ percent) slopes with very slight or no erosion. This group of soils includes the following mapping units:[1]

28a 78a 117a 132a

Drainage. These soils vary in their drainage needs. In most places natural drainage is adequate, but all of these mapping units include some areas where additional drainage by tiling or ditching is helpful. Types 117 and 132 drain slowly, and while tile may be used under very good management, open ditches will often prove more effective and cost less.

Wet areas of Types 28 and 78, which are bottomland soils, drain readily if the water table can be lowered by an open ditch or by tile.

Organic matter and nitrogen. It is very important to add organic matter to these soils since they are light-colored and rather low in organic-matter content and nitrogen-supplying power. Organic matter also helps to keep the soil from packing during rains and to keep the surface from crusting as it dries after rains.

Maintenance of good structure. Ordinarily no special precautions are necessary in tilling these soils. However, it is desirable to work them when moisture conditions are favorable. If this is done, if a good rotation is adopted, and if sod crops are plowed down at regular intervals, the surface soil will be more apt to stay granulated and porous to air and water.

Mineral plant-food deficiencies. Soil Types 28 and 78 do not require limestone. Type 28 may be slightly low in potash. Soil Types 117 and 132 require

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 28,** Jules silt loam, bottom, *page 11;* **Type 78,** Arenzville silt loam, bottom, *page 16;* **Type 117,** Bogota silt loam, *page 18;* **Type 132,** Starks silt loam, *page 18.*

limestone, phosphate, and potash in varying amounts. Soil tests should be made and used as guides to determine what areas need treatment and how much of the various plant nutrients each area requires.

Erosion control. Although erosion is not serious on these soils, the more sloping portions do have some tendency to erode. However, the good management practices mentioned above, plus a suitable rotation, will usually control erosion on these areas. Since Types 28 and 78 are bottomland soils, they are sometimes subject to stream bank cutting, especially where stream channels become choked with brush and debris. Also, silty deposits are often laid down and shifted about on these soils by spring floods.

Suitable crop rotations. Where drainage is adequate and the soil has been fully treated according to soil tests, this rotation may be used: two years of cultivated crops such as corn or soybeans, one year of small grain, and one year of a sod crop such as a legume or legume-grass mixture. However, rotations having more sod crops, such as the corn, oats, sod rotation, or the corn, corn, oats, sod, sod rotation, are preferable.

Bottomland Types 28 and 78, where unprotected by levees, are subject to yearly flooding, which frequently drowns out small grain and clover. These types are therefore used more for summer crops such as corn and soybeans. Where these two soils occur in very small, narrow bottoms they are probably best used for pasture.

Management of Group 4 Soils

Light-colored, very poorly drained silt loam soils with silty clay loam to silty clay subsoils: occurring on "a" (0 to ½ percent) slopes with no erosion. Many areas of these soils are depressional and receive silty wash from surrounding higher soils. This group of soils includes the following mapping units:[1]

45a 116a 136a

Drainage. The drainage problem on these soils is very acute. Many areas are depressional so that they receive runoff from adjacent higher land. Also soils of this group have heavy, very slowly to slowly permeable subsoils in which tile do not function satisfactorily. In some areas an open inlet into a tile line can be used to remove excess surface water. In other places open ditches may provide the best drainage system.

Organic matter and nitrogen. These soils are light-colored and low in organic matter and nitrogen. Plowing down sod crops regularly adds organic matter, which will help to keep the surface soil loose and less likely to pack and crust after rains. If the soils are too wet for good stands of legumes, nitrogen fertilizers can be used to advantage on the corn crop under normal weather conditions.

Maintenance of good structure. As mentioned above, growing and plowing down sod crops will help to keep the surface soil loose and friable, so that water and air can readily move through it. At present no easy way is known to improve the structure of the subsoil and thus increase underdrainage. Many areas of these soils are cultivated when they are too wet, since they dry slower than other soils in the same field. It is quite com-

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 45,** Denny silt loam, *page 13;* **Type 116,** Whitson silt loam, *page 18;* and **Type 136,** Brooklyn silt loam, *page 19.*

mon to see areas of Types 45 and 136 rutted by tractors and yet be unable to detect any evidence that the rest of the field was too wet at the time machinery was used for tillage.

Mineral plant-food deficiencies. These soils are acid and are low in phosphorus, potash, and nitrogen. Soil tests usually show that soils of this group need more lime and fertilizer than do surrounding soils. It is therefore advisable to apply soil treatments separately on these areas even though they are farmed with other soils in the field.

Erosion control. There is practically no erosion problem on these soils. Because of their low-lying or depressional nature they are often ponded and "silted in" from surrounding higher soils.

Suitable crop rotations. These soils are better suited for hay and pasture than for corn, particularly if it is very difficult or impractical to get adequate drainage. However, many of the areas are so small that they must be farmed with surrounding soils.

Such rotations as the following can be used when soils of this group are farmed separately: corn, oats, sod; corn, oats, sod, sod; corn, soybeans, wheat, sod, sod. The sod crop on these soils should probably be a legume-grass mixture since such a mixture will survive better on a wet soil than will legumes alone.

Management of Group 5 Soils

Dark-colored, moderately to well-drained silt loam soils with silt loam to silty clay loam subsoils: occurring on "a" (0 to 1½ percent) slopes with very slight or no erosion. This group of soils includes the following mapping units:[1]

36a	73a	80a	246a
37a	77a	148a	

Drainage. These soils have adequate natural drainage and do not require artificial drainage system such as tile or open ditches.

Organic matter and nitrogen. Although these soils have few serious management problems, they do need regular additions of organic matter. This is necessary to keep them in a physical condition which permits ready penetration of water, air, and plant roots. Turning under sod crops including legumes or mixtures of legumes and grasses is one of the best means of supplying this organic material. Plowing down legumes also adds valuable nitrogen for the grain crops. Sometimes it may be necessary to supplement the legume nitrogen with commercial nitrogen.

Maintenance of good structure. Because the soils of this group are well-drained, they are seldom too wet when they are worked. Good physical condition can be maintained easily by including enough sod crops in the rotation.

Mineral plant-food deficiencies. Lime and fertilizer requirements on these soils vary, depending largely on previous cropping. Soil Type 77 seldom needs much soil treatment; but the others should be tested for lime, phosphorus, and potash in order to determine where and how much to apply.

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 36,** Tama silt loam, *page 12;* **Type 37,** Worthen silt loam, *page 12;* **Type 73,** Huntsville loam, bottom, *page 15;* **Type 77,** Huntsville silt loam, bottom, *page 16;* **Type 80,** Alexis silt loam, *page 16;* **Type 148,** Proctor silt loam, *page 20;* **Type 246,** Bolivia silt loam, *page 21.*

Erosion control. Soils of this group are relatively free of erosion problems because they occur on gentle slopes and are readily permeable to water. Since Types 73 and 77 occur on the bottomlands, they are sometimes subjected to stream bank cutting and scouring action of flood waters.

Suitable crop rotations. Rotations should include standover legumes or legume-grass mixtures one year out of four or a legume catch crop one year out of three. Such four-year rotations as the following can be used: corn, corn, oats sod; or corn, soybeans, wheat, clover. If a three-year rotation is to be used, it might include corn, soybeans, wheat (legume catch crop); or corn, corn, oats (legume catch crop).

On bottomland Types 73 and 77 spring flooding may make it necessary to omit wheat and to use such summer crops as corn or soybeans instead. Many areas of Type 77 along small drainageways are often cut into irregular patches by the stream and can be used best for pasture.

Management of Group 6 Soils

Dark- to moderately dark-colored, moderately to well-drained silt loam soils with silt loam to silty clay loam subsoils: occurring on "b" (1 ½ to 4 percent) and "c" (4 to 7 percent) slopes with slight to moderate erosion. This group of soils includes the following mapping units:[1]

34c	36c	80b,c	246b
36b,$\overline{b}$	37b,c	148b	258b

Drainage. Since these soils occur on slopes and have moderate to good underdrainage, they do not have drainage problems.

Organic matter and nitrogen. Although these soils are moderate to high in organic-matter content, sod crops should be plowed down regularly. Plowing under clover adds nitrogen for the grain crops and also helps to keep the surface soil open and friable.

Maintenance of good structure. The surface texture of this group is usually a moderately heavy silt loam and can be kept reasonably well granulated by using sod crops every third or fourth year in the rotation. Because of the good surface drainage there is little tendency to work these soils when they are too wet.

Mineral plant-food deficiencies. Ordinarily these soils will require some limestone. Type 34 is apt to require less than the other types of this group. There is a greater need for phosphate fertilizers than for potash fertilizers on these soils. Soil tests should be used to determine the amounts to apply on each area.

Erosion control. These soils are sloping and therefore subject to some erosion when farmed to clean-tilled crops. In the northern part of the county, where some of these soils are underlain by a sandy substratum (areas indicated by diagonal, blue hatching on the soil map), gullies may develop rapidly if sheet erosion is allowed to expose the sandy material.

In Menard county on farms where 4-to-7-percent sloping Tama (36), Tallula (34), Worthen (37), and Alexis (80) are a small proportion of the total acreage, these soils are frequently used for pasture or hay. On other, more rolling farms, where more use is made of these

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 34,** Tallula silt loam, *page 12;* **Type 36,** Tama silt loam, *page 12;* **Type 37,** Worthen silt loam, *page 12;* **Type 80,** Alexis silt loam, *page 16;* **Type 148,** Proctor silt loam, *page 20;* **Type 246,** Bolivia silt loam, *page 21;* and **Type 258,** Sicily silt loam, *page 22.*

It's easy to see the need for a grassed waterway in this field of soybeans. On rolling soils row crops, if they are grown at all, should be contoured and not planted up and down the slope as they are here. Fig. 11

sloping soils for cultivated crops, erosion-control measures are necessary to prevent excessive soil losses. Measures may include grassed waterways (Figs. 11 and 12), contouring of row crops, and in some cases terraces.

Suitable crop rotations. Any rotation for these soils must take into account the erosion hazard. In Table 2 are indicated the most intensive rotations recommended for various combinations of slope and conservation practice. Wherever pos-

On sloping soils, such as those in Management Group 6, contouring row crops and sodding down waterways will help to reduce soil losses by erosion. Fig. 12

Table 2.—Most Intensive Rotations Recommended for Soils of Management Group 6

(Tallula, Tama, Worthen, Alexis, Proctor, Bolivia, and Sicily on "b" and "c" slopes with over 6 inches of surface and subsurface soil remaining)

Percent of slope	Most intensive rotation with—			
	No conservation practices	Contouring	Strip cropping	Terracing
b (1½-4)	R-R-G-M-M	R-R-G-M	R-R-G-M-M-M	R-R-G-M
c (4-7)	R-G-M-M	R-R-G-M-M	R-R-G-M-M-M	R-R-G-M

R = row crop; G = small grain; M = rotation hay or pasture. For example, an R-R-G-M-M rotation has two years of clean-tilled row crops, such as corn and soybeans; one year of small grain; and two years of sod crops in a five-year rotation period.

sible, it would be better to use rotations with fewer cultivated crops. This is particularly true of Sicily silt loam (258), which is not quite so productive as the other soils in this group and in general should be in grasses and legumes for longer periods.

Although 36$\overline{b}$ (which has only 2 to 6 inches of surface and subsurface soil) is included with this group of slightly eroded soils, it can be handled the same as 36b (which has over 6 inches of surface and subsurface soil).

Management of Group 7 Soils

Dark-colored, well-drained silt loam soils with silt loam to silty clay loam subsoils: occurring on "c" (4 to 7 percent) and "d" (7 to 12 percent) slopes with slight to severe erosion. This group of soils includes the following mapping units:[1]

34d	36$\overline{c}$,$\underline{c}$	80$\overline{c}$
34-35$\overline{c}$,$\overline{d}$	36d,$\overline{d}$	

Drainage. Since surface drainage is rapid on these sloping soils, the problem is one of reducing or slowing down runoff rather than one of drainage. Occasionally there are seepage spots on slopes, but generally they are not too difficult to handle.

Organic matter and nitrogen and maintenance of good structure. Organic matter and nitrogen need not be a problem with rotations that include enough sod crops to keep soil losses from erosion reasonably small. The same thing is true of maintaining good physical condition.

Mineral plant-food deficiencies. Tallula (34) and Tallula-Bold (34-35) seldom need much lime. Since these two soils have a high lime content, superphosphate is apt to give better results than rock phosphate in correcting phosphorus deficiencies. The other soils of this group generally require 2 to 3 tons of lime per acre. Soil tests should be made and used as guides for lime and fertilizer treatments.

Erosion control and suitable crop rotations. Unless intensive erosion-control measures are practiced on these soils, they should be used for hay and pasture. All of them have subsoils that are permeable to water, but because of their sloping nature, they are subjected to severe erosion when in cultivated crops.

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 34,** Tallula silt loam, *page 12;* **Types 34-35,** Tallula silt loam — Bold silt loam, undifferentiated, *page 12;* **Type 36,** Tama silt loam, *page 12;* and **Type 80,** Alexis silt loam, *page 16.*

Table 3.—Most Intensive Rotations Recommended for Soils of Management Group 7

(Tallula, Tallula-Bold complex, Tama, and Alexis on "c" and "d" slopes with varying thicknesses of surface and subsurface soil remaining)

Percent of slope	Thickness of surface and subsurface soil	Most intensive rotation with—			
		No conservation practices	Contouring	Strip cropping	Terracing
	inches				
c (4-7).....	2-6.....	R-G-M-M-M	R-R-G-M-M	R-R-G-M-M-M	R-R-G-M
	Less than 2..	R-G-M-M-M	R-G-M	R-R-G-M-M-M	R-G-M
d (7-12)....	Over 6.....	G-M-M-M-M	R-G-M-M	R-R-G-M-M-M	R-R-G-M
	2-6.....	Pasture or hay	R-G-M-M-M	R-R-G-M-M-M	R-R-G-M-M

R = row crop; G = small grain; M = rotation hay or pasture. For example, an R-G-M-M-M rotation has one year of clean-tilled row crops, such as corn or soybeans; one year of small grain; and three years of sod crops in a five-year rotation period.

Table 3 shows the most intensive rotations recommended for the different slopes and degrees of erosion. Less intensive rotations are especially desirable on Type 34 and the combination of Types 34 and 35 since calcareous (limey) loess is present at shallow depths on these areas. Type 35 actually is the outcropping of the calcareous loess, which is very unproductive for most crops, though not for grasses and legumes.

Wherever members of this group are underlain by sand (areas indicated by diagonal blue hatching on the soil map) special precautions are necessary to avoid rapid gully erosion on slopes where the sandy material outcrops or comes near the surface. More use of hay and pasture should be made on the areas underlain by sand. It is probable that such erosion-control measures as terracing are more hazardous on the mapping units having a sandy substratum.

In Menard county much of the Alexis (80) is underlain by gravel, and where there has been some erosion, the nearness of the gravel to the surface may cause drouthiness. On those areas it is best to make greater use of hay or pasture than is indicated in Table 3.

Management of Group 8 Soils

Light-colored, moderate to well-drained silt loam soils with silty clay loam subsoils: occurring on "a" (0 to 1 ½ percent) and "b" (1 ½ to 4 percent) slopes with slight to moderate erosion. This group of soils includes the following mapping units:[1]

117b 134a 134b 283b,b̄

Drainage. Drainage is not usually a problem on these soils.

Organic matter and nitrogen and maintenance of good structure. Supplying nitrogen and organic matter and maintaining good structure on the soils of this group can be accomplished best by using a rotation that has enough sod crops, including legumes. These soils are light-colored and lower in nitrogen-supplying power than the dark-colored soils developed under prairie grass. They therefore generally need more nitrogen additions for high yields of corn. Under many conditions nitrogen fertilizers will help supply nitrogen needs. The nitrogen problem is discussed in detail in "Meet-

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 117,** Bogota silt loam, *page 18;* **Type 134,** Camden silt loam, *page 19;* and **Type 283,** Clary silt loam, *page 23.*

Table 4.—Most Intensive Rotations Recommended for Soils of Management Group 8

(Bogota, Camden, and Clary on "a" and "b" slopes with varying thicknesses of surface and subsurface soil remaining)

Percent of slope	Thickness of surface and subsurface soil	Most intensive rotation with—			
		No conservation practices	Contouring	Strip cropping	Terracing
	inches				
a (0-1½) . .	Over 6	R-R-G-M-M[a]	. . . . .	. . . . .	. . . . .
b (1½-4) . .	Over 6	R-G-M-M	R-R-G-M-M	R-R-G-M-M-M	R-R-G-M-M
	2-6	R-G-M-M	R-G-M	R-R-G-M-M-M	R-R-G-M-M

R = row crop; G = small grain; M = rotation hay or pasture. For example, an R-R-G-M-M rotation has two years of clean-tilled row crops, such as corn or soybeans; one year of small grain; and two years of sod crops in a five-year rotation period.

[a] Can be shortened to one year of pasture (R-R-G-M) if legume is not removed.

ing the Nitrogen Problems on Illinois Soils," Illinois Agricultural Experiment Station Mimeograph AG1489, April, 1951.

Mineral plant-food deficiencies. These soils require limestone, phosphate, and in some cases potash fertilizers. Soil tests will help to determine where the different soil amendments are needed and how much of each to apply.

Erosion control and suitable rotations. Because these soils have less organic matter and lower nitrogen-supplying power than the dark-colored prairie soils, they should not be farmed quite so intensively on equivalent slopes. Generally more sod crops, grasses and legumes, are needed in the rotation to supply the nitrogen and organic matter for good corn crops on these soils. Table 4 gives recommended rotations for the mapping units included in this group. Grass waterways usually are necessary where shallow draws traverse the "b" (1½ to 4 percent) slope areas.

Management of Group 9 Soils

Light-colored, well-drained silt loam soils with silty clay loam subsoils: occurring on "c" (4 to 7 percent) and "d" (7 to 12 percent) slopes with slight to severe erosion. This group of soils includes the following mapping units:[1]

19d,$\bar{d}$	19-35$\bar{d}$	134d,$\bar{d}$
19-35$\bar{c}$,$\underline{c}$	134c,$\bar{c}$	283c,$\bar{c}$,$\underline{c}$

Drainage. Drainage is not a problem on these soils.

Organic matter and nitrogen and maintenance of good structure. These soils have moderate to moderately rapid permeability, which means that water will readily penetrate the subsoils and be stored there for crop usage. However, in order for a considerable amount of the annual rainfall, particularly summer rainfall, to enter these soils, it is important to keep the surface soil friable and well granulated, so that it is porous to water and air. Unless enough organic matter is plowed down on these soils, they tend to pack and crust after summer showers. The result is that succeeding rains run off down the slopes before

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 19,** Sylvan silt loam, *page 10;* **Types 19-35,** Sylvan silt loam — Bold silt loam, undifferentiated, *page 10;* **Type 134,** Camden silt loam, *page 19;* and **Type 283,** Clary silt loam, *page 23.*

very much water has a chance to soak into the soil and replenish the subsoil moisture supply.

Legumes should be at least a part of the sod crops because of their ability to take nitrogen from the air and add it to the soil when the crop is plowed under.

Mineral plant-food deficiencies. Bold silt loam (35) has a natural excess of lime and should not receive additional applications. Superphosphate should be used instead of rock phosphate since rock phosphate is not very effective on soils high in lime. Sylvan silt loam (19) may require small amounts of lime, while Clary (283) and Camden (134) ordinarily require several tons per acre if they have been cleared and farmed for a considerable number of years.

These soils are generally low in available phosphorus and may also require some potash fertilizers for good crop yields.

Erosion control and suitable crop rotations. Soils of this group should be used and managed in much the same way as

A close-up view of gullies forming between rows of soybeans that run up and down the slope on an area of Bold silt loam. Fig. 13

Three of the men who took part in the field work of the Menard county soil survey talk over the problems of trying to produce corn on an eroded hillside. Note the much better corn growth in the background where there has been very little erosion. Fig. 14

Table 5.—Most Intensive Rotations Recommended for Soils of Management Group 9

(Sylvan, Sylvan-Bold complex, Camden, and Clary on "c" and "d" slopes with varying thicknesses of surface and subsurface soil remaining)

Percent of slope	Thickness of surface and subsurface soil	Most intensive rotation with—			
		No conservation practices	Contouring	Strip cropping	Terracing
	inches				
c (4-7)....	Over 6.....	R-G-M-M-M	R-R-G-M-M-M	R-R-G-M-M-M	R-R-G-M-M
	2-6.....	R-G-M-M-M	R-G-M-M	R-R-G-M-M-M	R-R-G-M-M
	Less than 2	G-M-M-M-M	R-G-M-M	R-R-G-M-M-M	R-G-M
d (7-12)..	Over 6.....	Pasture or hay	R-G-M-M-M-M	R-G-M-M	R-G-M
	2-6.....	Pasture or hay	G-M-M-M-M	R-G-M-M	R-G-M

R = row crops; G = small grain; M = rotation hay or pasture. For example, an R-G-M-M-M rotation has one year of clean-tilled row crops, such as corn or soybeans; one year of small grain; and three years of sod crops in a five-year rotation period.

those of Group 7. However, since the soils of Group 9 are lighter-colored and lower in organic matter than Group 7 soils, they should not be farmed with quite as intensive a rotation. (Some of the results of too-intensive rotations on these soils are shown in Figs. 13 and 14.)

Without conservation practices soils of this group should be used largely for hay and pasture. With contouring, strip cropping, or terracing they can be used for more intensive rotations; but even with contouring and strip cropping, more sod crops than clean-tilled crops such as corn and soybeans should be grown. Recommended rotations are given in Table 5.

Waterways and any areas where water concentrates in considerable amounts should be maintained in vigorous stands of grass. "Grass or Gullies," Illinois Extension Circular 593, gives many helpful suggestions on establishing waterways.

Where these soils are underlain by sand (indicated by diagonal blue hatching on the soil map), outcroppings of loose sandy material may occur on many slopes. In these areas special steps are needed to prevent gullying.

Management of Group 10 Soils

Light- and dark-colored, well-drained silt loam soils with silty clay loam subsoils: occurring on "d" (7 to 12 percent) and "e" (12 to 18 percent) slopes with slight to severe erosion. This group of soils includes the following mapping units:[1]

19e,ē	19-35e,ē	36d̲
19-35d̲	34-35d̲	

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 19,** Sylvan silt loam, *page 10;* **Types 19-35,** Sylvan silt loam — Bold silt loam, undifferentiated, *page 10;* **Types 34-35,** Tallula silt loam — Bold silt loam, undifferentiated, *page 12;* **Type 36,** Tama silt loam, *page 12.*

The mapping units included in this group should be used largely for pasture. Some of the least sloping and least eroded areas can be used mainly for hayland, but if so, they should be cultivated only once in six or seven years. Areas still in standing timber probably should be left that way.

Establishing good pastures on many areas of this group will be a matter of renovating old pastures or reclaiming wasteland. Also some areas being cropped at present should be converted to pasture. For good yields pasture lands often require soil treatment. Soil tests

Soils of Management Groups 10 and 11 are very poorly suited for cultivated crops. This steep slope should not have been planted to soybeans; already part of it (center of photo) has had to be abandoned because of erosion. Fig. 15

should be made, especially since the soils of this management group may be rather variable in their need for treatment. If legumes or a legume-grass mixture is grown, the nitrogen and organic-matter needs of the soil are likely to be taken care of.

The establishment and care of pastures and the pasture plants adapted to Illinois are discussed in detail in "Pastures for Illinois," Illinois Extension Circular 647.

Gully erosion can be a serious problem on these soils, especially in the northern part of Menard county where they may be underlain by sand (areas indicated by diagonal blue hatching on the soil map). A vigorous growth of good pasture plants will keep erosion at a minimum.

Improved pasture and woodland are the two most suitable purposes for which the soils of Management Group 11 can be used. Fig. 16

Often one step in establishing good pastures on the soils of Management Group 11 is to remove brush and small tree growth. The brush was cleared from this pasture in 1948, but nothing further was done, and 4 years later it has another good start. Fig. 17

Management of Group 11 Soils

Light-colored, well-drained silt loam and loam soils with silt loam to silty clay loam subsoils: occurring on "e," "f," and "g" (12 to over 30 percent) slopes with slight, moderate, and severe erosion. This group of soils includes the following mapping units:[1]

8-19e,ē,e	19g,ḡ	30f,f̄
8-19f,f̄,f	19-35e	30g,ḡ
8-19g,ḡ,g	19-35f,f̄,f	134ē
19f,f̄	19-35g,ḡ,g	

The mapping units in this group include strongly rolling to steep silt loams or loam soils that are suitable only for pasture or woodland (Fig. 16). Many of the units that have over 6 inches of surface and subsurface soil are in timber and should be left in trees. In addition, many of the very steep, eroded areas that are not now in timber should be reforested. This is particularly true of areas on "g" slopes as they are very difficult, if not impossible, to renovate. For suggestions on reforestation, including methods of planting, varieties for various purposes, and costs and returns, refer to "Forest Planting on Illinois Farms," Illinois Extension Circular 567.

Pastures can be established on "e" and "f" slopes if they are not too badly eroded. These areas can be renovated satisfactorily with tractor-drawn equipment. (As already mentioned, areas having "g" slopes are either too steep for renovation or are very difficult to renovate.) The procedure for establishing good pastures on the soils of this group is similar to, but in general more difficult than, that for Management Group 10.

Detailed information on establishing pastures is given in "Pastures for Illinois," Illinois Extension Circular 647.

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Types 8-19,** Hickory loam — Sylvan silt loam, undifferentiated, *page 7;* **Type 19,** Sylvan silt loam, *page 10;* **Types 19-35,** Sylvan silt loam — Bold silt loam, undifferentiated, *page 10;* **Type 30,** Hamburg silt, *page 11;* and **Type 134,** Camden silt loam, *page 19.*

Some of the steps that should be taken in establishing and maintaining high-quality, high-yielding pastures on the soils of Management Group 11 are listed below:

1. Remove brush and fill in gullies (Fig. 17).

2. Use terraces and contour furrows where necessary. On some areas these measures may help to hold the soil while a good sod is being established, and to dispose of excess water during periods of high rainfall.

3. Test soils to determine fertility needs.

4. Apply fertilizers to correct soil deficiencies.

5. If a mixed pasture is desired, select a suitable combination of grasses and legumes and obtain high-quality, adapted seed.

6. Prepare a good seedbed and seed at proper time.

7. Once the pasture is established, follow these principles of good management: (**a**) prevent overgrazing, (**b**) mow to keep down weeds, (**c**) harrow frequently to scatter droppings from the stock and encourage more uniform grazing.

Where soils of this group have a sandy substratum (areas indicated by diagonal blue hatching on the soil map) there is greater danger of gully erosion than where the sandy layer is absent. Once erosion has removed the silty material above the sandy layer, gullies are apt to develop very rapidly in the loose, sandy material. Also, extra precautions should probably be taken in building ponds in areas underlain by sand, so that the sandy lens does not act as underground drain of the ponds' water supply.

Management of Group 12 Soils

Light- and dark-colored, moderate to well-drained loamy sands and sandy loam soils, with loamy sand, sandy loam, and sandy clay loam subsoils: occurring on "a" (0 to 1 ½ percent) and "b" (1 ½ to 4 percent) slopes with slight to occasionally moderate erosion. This group of soils includes the following mapping units:[1]

80-88b	88b	184a,b	186b,$\overline{b}$
87a,b	150a,b		

The soils in this group vary more in characteristics and properties than do the soils of some of the other groups. However, except for Soil Type 80, they are all nearly level to gently sloping sandy soils. Soil Type 80 is a silt loam, but where it occurs in very close association with Type 88, Hagener loamy sand, it should be managed the same as the sandy soils.

Many areas of the sandy soils, particularly areas of Sumner (87) are small and intermingled among much better soils, and must be farmed as are the surrounding soils. When the soils of Group 12 occur in large enough areas to be managed separately, they can be largely used for hay or pasture, with about one year out of four or five devoted to intertilled crops. A rotation which includes one year of row crops, one year of small grain, and two or three years of sod crops can be used.

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Types 80-88,** Alexis silt loam—Hagener loamy sand, undifferentiated, *page 16;* **Type 87,** Sumner sandy loam, *page 17;* **Type 88,** Hagener loamy sand, *page 17;* **Type 150,** Onarga sandy loam, *page 20;* **Type 184,** Roby fine sandy loam, *page 21;* **Type 186,** Kincaid fine sandy loam, *page 21.*

One reason for keeping these soils in hay or pasture much of the time is that they are somewhat drouthy. This is especially true of Hagener. Also, when they are covered with vegetation, there is less drifting by wind. Soil Types 88 and 186 are more likely to be affected by drifting than the other soils in this group. If these two soils occur in large enough areas, field strips about 20 rods wide will effectively control wind erosion.

The soils in this group need liberal amounts of legumes to supply organic matter and nitrogen. It is also important to treat the soils according to the results of soil tests.

Management of Group 13 Soils

Light- and dark-colored, well-drained loamy sands and sandy loam soils with loamy sand, sandy loam and sandy clay loam subsoils: occurring on "c" (4 to 7 percent) and "d" (7 to 12 percent) slopes with slight to moderate erosion. This group of soils includes the following mapping units:[1]

80-88c,$\bar{c}$	87d,$\bar{d}$	88d,$\bar{d}$	186c,$\bar{c}$
87c,$\bar{c}$	88c,$\bar{c}$	150c,$\bar{c}$	186d,$\bar{d}$

The sandy soils of this group should be used mainly for hay and permanent pasture in order to control both wind and water erosion (Fig. 18). Alexis silt loam (80) is not a sandy soil, but where it occurs very closely associated with Soil Type 88, it should be managed the same as the sandy soils.

Quite often Hagener loamy sand (88) on "d" (7 to 12 percent) slopes can be used to best advantage by planting it to pine trees rather than trying to establish and maintain stands of grasses and legumes.

Establishing good, high-yielding pastures on the soils of this group will involve steps similar to those discussed under Management Group 11. It is, however, harder to establish pastures on Group 13 soils than on the silt loam soils of Group 11, because the sandy soils, especially Hagener, are somewhat drouthy and have a lower moisture-holding capacity.

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Types 80-88,** Alexis silt loam — Hagener loamy sand, undifferentiated, *page 16;* **Type 87,** Sumner sandy loam, *page 17;* **Type 88,** Hagener loamy sand, *page 17;* **Type 150,** Onarga sandy loam, *page 20;* and **Type 186,** Kincaid fine sandy loam, *page 21.*

Alfalfa for either hay or pasture is a good crop to grow on the sandy soils of Management Group 13. Fig. 18

These soils may need considerable fertilization before good pasture plants, including legumes, can be grown. Soil tests should be made and used as a guide in soil treatment.

"Pastures for Illinois," Illinois Extension Circular 647, contains much useful information on the establishment and management of pastures. Included in this circular are the following lists of grasses and legumes that should be considered for pastures on sandy soils:

Drouth-resistant grasses and legumes

Bromegrass	Lespedeza
Tall oatgrass	Sweet clover
Switch grass	Alfalfa
Big bluestem	Birdsfoot trefoil

Grasses and legumes tolerant to sandy soil

Bromegrass	Redtop
Italian ryegrass	Alfalfa
Tall oatgrass	Wintervetch
Canada bluegrass	Cowpeas

Management of Group 14 Soils

Light-colored, excessively well-drained sandy loam and sandy soils with sandy clay loam and sandy subsoils: occurring on slopes ranging from 1 to over 30 percent with slight, moderate, and severe erosion. This group of soils includes the following mapping units:[1]

53b,$\bar{b}$	53e,$\bar{e}$	186$\underline{c}$,$\underline{d}$	186f,$\bar{f}$,$\underline{f}$
53c,$\bar{c}$	54a,b,$\bar{b}$	186e,$\bar{e}$,$\underline{e}$	186g,$\bar{g}$
53d,$\bar{d}$	54c,$\bar{c}$,$\bar{d}$		

The soils of this group, because of their sandy nature and low clay content, are drouthy and are not well adapted to grain crops. Any cropping system should take into account the fact that these soils are subject to drifting by the wind unless they are protected by a cover of vegetation most of the time.

Bloomfield fine sand (53) and Plainfield sand (54) on "a" and "b" (0 to 4 percent) slopes can be used for hay crops. A rotation such as one year for a small grain crop followed by four years of hay or pasture crops is about the most intensive cropping system that should be used on these soils. After proper fertilization, early-maturing crops such as rye, or drouth-resistant crops such as alfalfa or cowpeas do fairly well.

On the intermediate "c" and "d" (4 to 12 percent) slopes of this group some pasture can be grown if very well managed. Many areas, however, can be used most profitably for the production of pine forest for Christmas trees, fence

Melons are adapted to the drouthy, sandy soils of Management Group 14 but should not be grown on the strongly sloping areas. Fig. 19

[1] For descriptions of the soil types of which these mapping units are a part, see the following pages: **Type 53,** Bloomfield fine sand, *page 14;* **Type 54,** Plainfield sand, *page 14;* and **Type 186,** Kincaid fine sandy loam, *page 21.*

posts, and in later years lumber. Slopes steeper than 12 percent definitely should be reforested. For information on the planting of trees refer to University of Illinois Extension Circular 567, "Forest Planting on Illinois Farms."

Drouth-resistant crops such as melons, cantaloupes, and sweet potatoes are adapted to these soils but should not be grown on the steeper slopes (Fig. 19). Information on growing these special crops may be had from the Department of Horticulture, University of Illinois, Urbana, Illinois.

CHECK YOUR PRESENT MANAGEMENT

The best over-all check of your cropping system and soil-management program is to compare your crop yields with yields obtained on other farms and on experiment fields. For a valid comparison, you need to use the average yields over a period of at least five years. A period this long is necessary to balance out the wide seasonal variations that occur in rainfall, temperature, wind, and insect and disease injury.

Table 6 shows actual farm yields. Table 6 gives average yields to be expected over a period of years under a moderately high level of management. Some of the figures in the table represent actual yields obtained on a particular soil type by farmers who kept records in cooperation with the Department of Agricultural Economics, University of Illinois. Other figures have been estimated on the basis of soil characteristics and yields from similar soil types. All the yields used as a basis for estimates, as well as the actual yields given in the table, were obtained under farm conditions. No mixed fertilizers were used, but limestone and straight phosphate and potash goods were applied as needed.

If you find that your average yields for five years or longer are much below those shown in Table 6 for your soil types, it will pay you to examine your management practices to see where changes should be made.

Yields in Table 6 can also be used to compare different soils under the same level of management. From the standpoint of investment in land, however, it should be realized that good management may be more difficult and more costly to apply to one soil than to another.

Experiment fields show higher yields are possible. Yields given in Table 6 do not represent maximum production for the various soil types. Tables 7 to 10 give results from the University of Illinois experiment fields located on soils that are the same as or similar to some of the soils in Menard county. These results indicate what can be done on these particular soils with various soil treatments and fair to good cropping systems over a period of years. In general, the yields on the experiment fields are higher than those given in Table 6 for the same soils.

The experiment fields had fair to good crop rotations and large amounts of the various soil treatments in effect for about 25 years before 1937. The cumulative advantages of this long period of good treatment and management may partly account for the 1937-1951 yields on these fields being higher than those that many farmers obtained under good management during the same period. Good soil treatment and cropping systems, though, once put into effect, soon result in improved yields. So there is no reason why

Table 6. — AVERAGE YIELDS OF CROPS

To Be Expected on Menard County Soils Over a Period of Years Under a Moderately High Level of Management

Figures in **bold face** are based on long-time records kept by farmers in cooperation with the Department of Agricultural Economics; the others are estimated yields. *All yields were obtained without the use of mixed fertilizers or commercial nitrogen.*

Type No.	Type name	Hybrid corn	Wheat	Oats	Soy-beans	Alfalfa	Mixed pasture
		bu.	*bu.*	*bu.*	*bu.*	*tons*	*days*[a]
8-19	Hickory loam-Sylvan silt loam, undifferentiated	N	N	N	N	N	90
19	Sylvan silt loam	45(E)	18(E)	32(E)	17(E)	2.1	110
19-35	Sylvan silt loam-Bold silt loam, undifferentiated	30(E)	15(E)	25(E)	14(E)	2.0	100
28	Jules silt loam, bottom	52(D)	22(D)	37(D)	23(D)	2.0(D)	120
30	Hamburg silt	N	N	N	N	N	70
34	Tallula silt loam	61(E)	23(E)	45(E)	22(E)	2.7	120
34-35	Tallula silt loam-Bold silt loam, undifferentiated	45(E)	19(E)	30(E)	18(E)	2.3	110
36	Tama silt loam	**65**(E)	**24**(E)	**47**(E)	**24**(E)	**2.9**	140
37	Worthen silt loam	64(E)	24(E)	46(E)	24(E)	2.8	135
43	Ipava silt loam	**70**	**26**	**51**	**28**	**2.8**	140
45	Denny silt loam	45	18	35	20	N	100
53	Bloomfield fine sand	N	N	N	N	1.4	70
54	Plainfield sand	N	N	N	N	1.3	60
65	Illiopolis silty clay loam	**69**	**25**	**48**	**28**	**2.4**	140
65-244	Illiopolis silty clay loam-Hartsburg silty clay loam, undifferentiated	**67**	**24**	**46**	**27**	**2.2**	135
67	Harpster silty clay loam	**65**	**21**	**44**	**25**	2.0	130
73	Huntsville loam, bottom	50(D)	22(D)	36(D)	23(D)	2.0(D)	130
77	Huntsville silt loam, bottom	60(D)	23(D)	42(D)	25(D)	2.2(D)	140
78	Arenzville silt loam, bottom	52(D)	23(D)	37(D)	23(D)	2.0(D)	120
80	Alexis silt loam	58(E)	23(E)	41(E)	22(E)	2.3	120
80-88	Alexis silt loam-Hagener loamy sand, undifferentiated	47(E)	18(E)	35(E)	18(E)	2.0	100
81	Littleton silt loam	68	25	49	26	2.7	140
83	Wabash silty clay, bottom	58(D)	21(D)	36(D)	24(D)	N	120
87	Sumner sandy loam	**43**(E)	**17**(E)	**34**(E)	**16**(E)	**1.8**	90
88	Hagener loamy sand	**40**(E)	**15**(E)	30(E)	14(E)	1.7	80
107	Sawmill silty clay loam, bottom	60(D)	22(D)	37(D)	25(D)	N	130
116	Whitson silt loam	50	21	36	20	1.7	100
117	Bogota silt loam	54(E)	**23**(E)	39(E)	22(E)	2.2	110
132	Starks silt loam	56	23	41	22	2.2	110
134	Camden silt loam	55(E)	23(E)	40(E)	22(E)	2.3	115
136	Brooklyn silt loam	42	18	30	19	N	90
148	Proctor silt loam	**64**(E)	**24**(E)	**48**(E)	**24**(E)	2.7	140
149	Brenton silt loam	**71**	**26**	**52**	**27**	**2.8**	145
150	Onarga sandy loam	48(E)	20(E)	36(E)	18(E)	2.0	100
152	Drummer silty clay loam	**70**	**25**	**49**	**28**	**2.5**	140
184	Roby fine sandy loam	42(E)	17(E)	33(E)	15(E)	1.8	90
186	Kincaid fine sandy loam	40(E)	16(E)	31(E)	14(E)	1.9	90
206	Thorp silt loam	**56**	21	**41**	23	2.0	110
246	Bolivia silt loam	**67**	**25**	**49**	**26**	**3.0**	140
257	Clarksdale silt loam	58	24	43	25	2.2	120
258	Sicily silt loam	57	24	43	24	2.5	120
283	Clary silt loam	54(E)	22(E)	40(E)	20(E)	2.5	110
284	Tice silty clay loam, bottom	59(D)	23(D)	38(D)	25(D)	N	130

LETTERS HAVE THE FOLLOWING MEANINGS: **N** = Crop not adapted. **D** = Yields for bottomland types, assuming less than 10 percent damage by flooding. **E** = Erosion by water or wind is often a problem. Estimated yields are for areas which are uneroded or only slightly eroded. Crop adaptation and the kind of cropping systems suitable for controlling erosion depend on the soil type, slope, thickness of remaining surface and subsurface soil, and the conservation practices followed. For detailed information refer to the use and management section.

[a] Estimated number of days that one acre will carry one cow.

farmers having soils similar to those in the experiment fields cannot approach the yields in Tables 7 to 10.

Whatever the soil type, most farmers in Menard county should be able to increase their yields by studying their soils and following the management recommendations made for the various map-

Table 7. — IPAVA SILT LOAM (43) WITH SOME ILLIOPOLIS SILTY CLAY LOAM (65)

Average Annual Yields per Acre, 1937-1951

(Carthage Soil Experiment Field, Hancock County: Standard Treatment Plots of Series 100 to 400)

Treatments	1st year hybrid corn, 15 crops 1937-1951	Soybeans 10 crops 1942-1951	Wheat 15 crops 1937-1951	Oats 5 crops 1937-1941	Hay[a] 14 crops 1938-1951
	bu.	*bu.*	*bu.*	*bu.*	*tons*
0	62.1	22.9	17.1	45.5	1.3
M	86.2**	26.9	26.7**	59.0	2.4
ML	97.8‡	29.1	30.7‡	66.5	3.2
MLP	99.3‡	29.4	31.5‡	67.8	3.3
0	69.3	25.7	19.3	53.2	1.8
R	82.2	28.6	20.1	57.4	1.1
RL	94.2‡	31.2	23.1	63.5	1.6
RLP	94.4‡	29.8	26.6†	63.6	2.0
RLPK	99.9‡	32.1	29.1‡	62.3	2.1

CROPPING PRACTICES: 1937-1941—corn, oats, hay, wheat (le); 1942-1951—corn, soybeans, wheat (le), corn, soybeans, wheat, hay (2 years). The legume (le) was plowed under as a green manure.

KEY TO STANDARD SOIL TREATMENTS APPLIED: 0=no treatment; M=manure (1 ton for each ton of crops removed); R=crop residues (stover, straws, legumes); L=limestone; P=rock phosphate; K=muriate of potash.

[a] The significance of differences in hay yields was not calculated because the kind of hay grown varied.

** Increase over preceding treatment highly significant. † Increase over check plot significant. ‡ Increase over check plot highly significant.

Table 8. — ILLIOPOLIS SILTY CLAY LOAM (65)

Average Annual Yields per Acre, 1937-1951

(Hartsburg Soil Experiment Field, Logan County: Standard Treatment Plots of Series 100 to 400)

Treatment	1st year hybrid corn 15 crops	2d year hybrid corn 15 crops	Wheat 15 crops	Oats 15 crops	Alfalfa and clover hay 15 crops
	bu.	*bu.*	*bu.*	*bu.*	*tons*
0	69.9	67.6	....	51.8	1.8
M	90.6**	90.2**	....	70.0**	2.9*
ML	92.0‡	91.2‡	....	71.4‡	3.1‡
MLP	92.8‡	91.1‡	....	67.8†	3.1‡
0	57.8	58.1	21.7	42.8	...
R	76.5**	65.9	26.0	50.5	...
RL	82.7‡	67.0	26.1	47.8	...
RLP	85.1‡	68.2	28.8	49.1	...
RLPK	84.9‡	68.3	28.2†	48.5	...

CROPPING PRACTICES: Manure (livestock) system, 1937-1951—corn, corn, oats, hay. Residue (grain) system, 1937-1951—corn, corn, oats (le), wheat (le). The legume (le) was plowed under as a green manure.

KEY TO STANDARD SOIL TREATMENTS APPLIED: 0=no treatment; M=manure (1 ton for each ton of crops removed); R=crop residues (stover, straws, legumes); L=limestone; P=rock phosphate; K=muriate of potash.

* Increase over preceding treatment significant. ** Increase over preceding treatment highly significant. † Increase over check plot significant. ‡ Increase over check plot highly significant.

ping units. Improving on the timeliness of farming operations and putting into effect a sound soil-treatment and cropping system will often pay big dividends.

One practice that will prove worthwhile in many seasons is to drill superphosphate with wheat and certain other small grains. Corn yields — particularly yields of second-year corn — are often improved by the use of mixed fertilizers at planting time. Applying a nitrogen fertilizer as a side dressing when corn is nearly knee-high frequently gives additional increases. Small grains are also likely to benefit from nitrogen fertilizers applied in the spring. These fertilizers should not be used, however, if they cause lodging or very rank growth.

In most cropping systems, nitrogen fertilizers should not be thought of as a replacement for the legume crop. Rather, they should be used as a supplement where more nitrogen than that supplied by the legume can be utilized to advantage. More information on this subject is given in "Meeting the Nitrogen Problems on Illinois Soils," Mimeograph AG1489, Department of Agronomy, University of Illinois.

Costs can be estimated. In Tables 7 to 10 nothing is given on the costs of treatment. Rather accurate information may be obtained, however, by making soil tests and figuring the cost, at current prices, of the treatment necessary to fully meet the needs indicated by the tests.

Once a high level of fertility is reached, a certain amount of maintenance is required. Both the nutrients lost by cropping and the smaller amounts lost through leaching and erosion need to be replaced. Cost of maintenance can be calculated by adding together the

Table 9. — CHIEFLY TAMA SILT LOAM (36)

Average Annual Yields per Acre, 1937-1951

(Mt. Morris Soil Experiment Field, Ogle County: Standard Treatment Plots of Series 100 to 400)

Treatment	1st year hybrid corn 15 crops[a]	2d year hybrid corn 12 crops 1937-1948	Wheat 15 crops[b]	Oats 15 crops[c]	Hay 14 crops[d]
	bu.	*bu.*	*bu.*	*bu.*	*tons*
0	59.8	....	25.0	53.7	1.5
M	85.9**	....	31.7	67.7	2.0
ML	95.5‡	....	35.2†	73.1†	2.5
MLP	95.7‡	....	35.4†	74.0†	2.3
0	41.5	36.3	18.5	42.5	.
R	51.1	40.6	19.5	43.0	..
RL	81.2**	67.2**	27.5*	56.7**	..
RLP	86.3‡	69.6‡	30.6‡	59.1‡	..
RLPK	90.7‡	68.6‡	29.9‡	57.2‡	..

CROPPING PRACTICES: Manure (livestock) system, 1937-1941—corn, corn, oats (le), wheat (le); 1942-1947—corn, oats (le), wheat, hay; 1948-1951—corn, corn, oats, hay. Residue (grain) system, 1937-1948—corn, corn, oats (le), wheat (le); 1949-1951—corn, oats (le), wheat, hay. The legume (le) was plowed under as a green manure.

KEY TO STANDARD SOIL TREATMENTS APPLIED: 0 = no treatment; M = manure (1 ton for each ton of crops removed); R = crop residues (stover, straws, legumes); L = limestone; P = rock phosphate; K = muriate of potash.

[a] In the residue system the 1948 yield is missing for first-year hybrid corn because of changes made in the crop rotations. [b] In the manure system wheat yields for 1949, 1950, and 1951 are not included because wheat is not grown in the new crop rotation established in 1948. [c] In the manure system the 1948 yield is missing for oats because of changes made in the crop rotations. [d] In the manure system the 1946 yield is missing for hay. The significance of differences in hay yields was not calculated because the kind of hay grown varied.

* Increase over preceding treatment significant. ** Increase over preceding treatment highly significant. † Increase over check plot significant. ‡ Increase over check plot highly significant.

nutrients lost in different ways and figuring the amount of treatment needed to restore them.

Retesting needed. Retesting after six to eight years will show how well the fertility level has been maintained. Further information on this subject is given in University of Illinois Agronomy Mimeograph AG1539, "Maintenance Requirements for Fertile Soils."

Table 10. — OQUAWKA SAND — A SOIL TYPE INTERMEDIATE IN CHARACTER BETWEEN PLAINFIELD (54) AND HAGENER (88)

Average Annual Yields per Acre, 1937-1951

(Oquawka Soil Experiment Field, Henderson County: Standard Treatment Plots of Series 100 to 600)

Treatment	1st year hybrid corn 15 crops[a]	Soybeans 15 crops[a]	Wheat 15 crops	Rye 15 crops	Alfalfa 15 crops
	bu.	*bu.*	*bu.*	*bu.*	*tons*
0	34.1	9.6	7.5	9.2	0
M	51.0**	13.6*	13.1*	11.8	.2
ML	64.6*	17.5‡	21.8*	14.8‡	1.7**
MLP	63.7‡	18.3‡	22.1‡	14.7‡	1.6‡
0	38.1	9.7	9.2	8.9	0
R	45.0	10.4	8.7	9.5	0
RL	55.9‡	15.3*	16.0*	12.4†	1.4**
RLP	54.1‡	14.3†	15.4†	12.4†	1.3‡
RLPK	60.9*	19.3*	18.6‡	13.1†	2.2*

CROPPING PRACTICES: 1937-1951—corn, soybeans, rye, hay, wheat (le), alfalfa (6 years). The legume (le) was plowed under as a green manure.

KEY TO STANDARD SOIL TREATMENTS APPLIED: 0=no treatment; M=manure (1 ton for each ton of crops removed); R=crop residues (stover, straws, legumes); L=limestone; P=rock phosphate; K=muriate of potash.

[a] 1951 yields missing for first-year hybrid corn and soybeans on check plot in manure system and on residue plot in residue system.

* Increase over preceding treatment significant. ** Increase over preceding treatment highly significant. † Increase over check plot significant. ‡ Increase over check plot highly significant.

GROUPING OF SOILS OF MENARD COUNTY

Forty-one soil types were mapped in Menard county. Anyone who needs to become familiar with all of them will find it helpful to get an understanding of the relationships between them. A good picture of the soils of Menard county can be obtained by studying Table 11 and Fig. 20, where four general groups are recognized.

Upland soils. Menard county lies in an area where thick deposits of loess (a silty wind-deposited material) are found. Loess is the parent material from which most of the upland soils in the county have developed. These upland soils are shown in Fig. 20 in two major groups, A and B.

Group A soils have developed from loess 15 to 25 feet thick. Most of these soils are moderately permeable, so that moisture, air, and plant roots move freely in them, and yet they have a good moisture-holding capacity.

The soils in Group B have developed from coarse silty loess 3 to 6 feet thick over sand. The sandy substratum provides rapid under-drainage. Where the sand is at or near the surface, the soils may be drouthy.

Table 11. —MENARD COUNTY SOILS

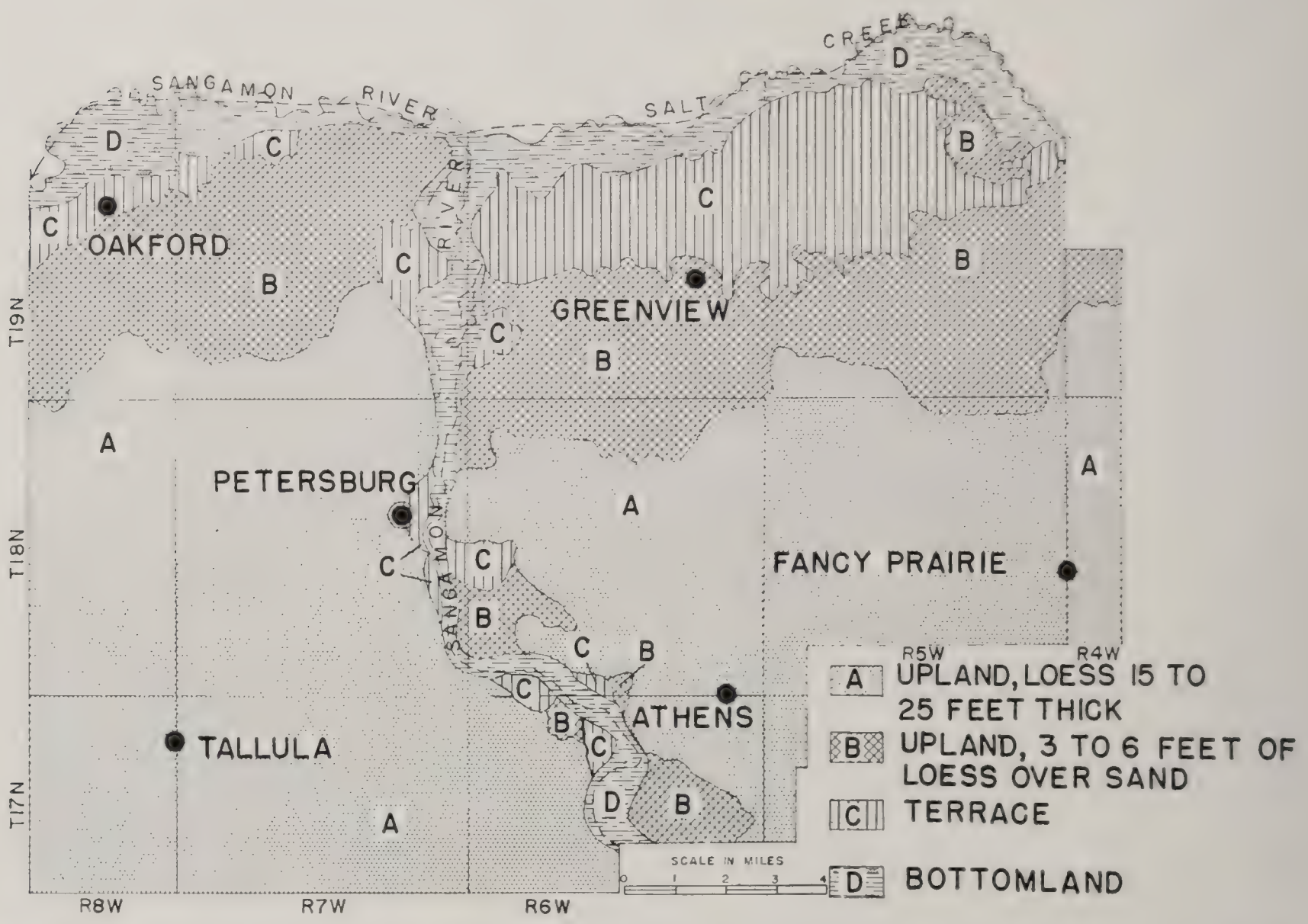
Grouped According to Parent Materials, Vegetation, and Slope

Soil group	Parent material	Native vegetation	Soil types grouped according to slope							
			a slope		b slope	c slope	d slope	e slope	f slope	g slope
			Less than ½%	½-1½%	1½-4%	4-7%	7-12%	12-18%	18-30%	More than 30%
A (Upland)	Loess 15 to 25 feet thick (silty)	Prairie	65, 65-244, 45	43, 246	246, 36	36, 34, 34-35	36, 34, 34-35	.....	30	30
		Prairie-timber[a]	.....	257	258	.....	.....	.....	.....	.....
		Timber	.....	116, 117	117, 283	283, 19-35	19, 19-35	19, 8-19, 19-35	19, 8-19, 19-35	.....
B (Upland)	Loess 3 to 6 feet thick over sand	Prairie	65, 67, 45, 206	43, 36	246, 36	36, 34, 34-35	36, 34, 34-35	.....	.....	.....
		Prairie-timber[a]	.....	257	258	.....	.....	.....	.....	.....
		Timber	.....	116, 117	117, 283	283, 19-35	19, 19-35	19, 8-19, 19-35	19, 8-19, 19-35	19, 8-19, 19-35
	Mixed loess and sand	Prairie	.....	87	87	87	87	.....	.....	.....
		Timber	.....	184	184, 186	186	186	186	186	186
	Sand	Prairie	.....	.....	88	88	88	.....	.....	.....
		Timber	.....	.....	53	53	53	53	.....	.....
C (Terrace)	Silt	Prairie	152, 67, 136, 206	149, 148, 80, 81, 37	148, 80, 37	80, 37	.....	.....	.....	.....
		Timber	.....	132, 134	134	134	134	134	.....	.....
	Mixed silt and sand	Prairie	.....	87, 150	87, 150, 80-88	87, 150, 80-88	87	.....	.....	.....
	Sand	Prairie	.....	.....	88	88	88	.....	.....	.....
		Timber	.....	54	54	54	54	.....	.....	.....
D (Bottom-land)	Silt, sand, and clay	Mixed trees and grass	83, 107, 284	28, 78, 73, 77	.....	.....	.....	.....	.....	.....

[a] "Prairie-timber" indicates that timber has invaded a prairie area but has not yet changed entirely the soil features that were developed under the grass vegetation.

Terrace soils. The soils of Group C occur on the terraces or benchlands along Salt creek and Sangamon river. They developed from stratified silts and sands that were deposited during the times of the great glaciers.

Bottomland soils. The bottomland soils, which are shown as Group D in Fig. 20, are composed of recent alluvial sediments deposited by Sangamon river and Salt creek. They are subject to flooding unless protected by levees.



Menard county is near one of the main sources of loess in the state, Illinois river flood plain, and therefore has thick loess deposits, from which nearly all of the upland soils have developed.

Most of the soils in Group A are permeable to water, and in the level, dark-colored areas requiring artificial drainage, tile function well.

Soils of Group B have a layer of sand, of varying thickness, at 3 to 6 feet in depth. Tiling is hazardous on these soils if the tile must be laid deep enough to be in the sand. However, in most areas of the Group B soils, the sandy substratum provides good underdrainage, and tiling is not necessary.

Of the terrace or benchland soils included in Group C, Drummer, Harpster, and Brenton can be tiled with no difficulty. Under good management, including a good rotation to keep the soil open and porous to water, tile also function satisfactorily in Thorp and Starks. Tiling is not recommended on Brooklyn, which has a very slowly permeable subsoil. Artificial drainage is not needed on the other terrace soils.

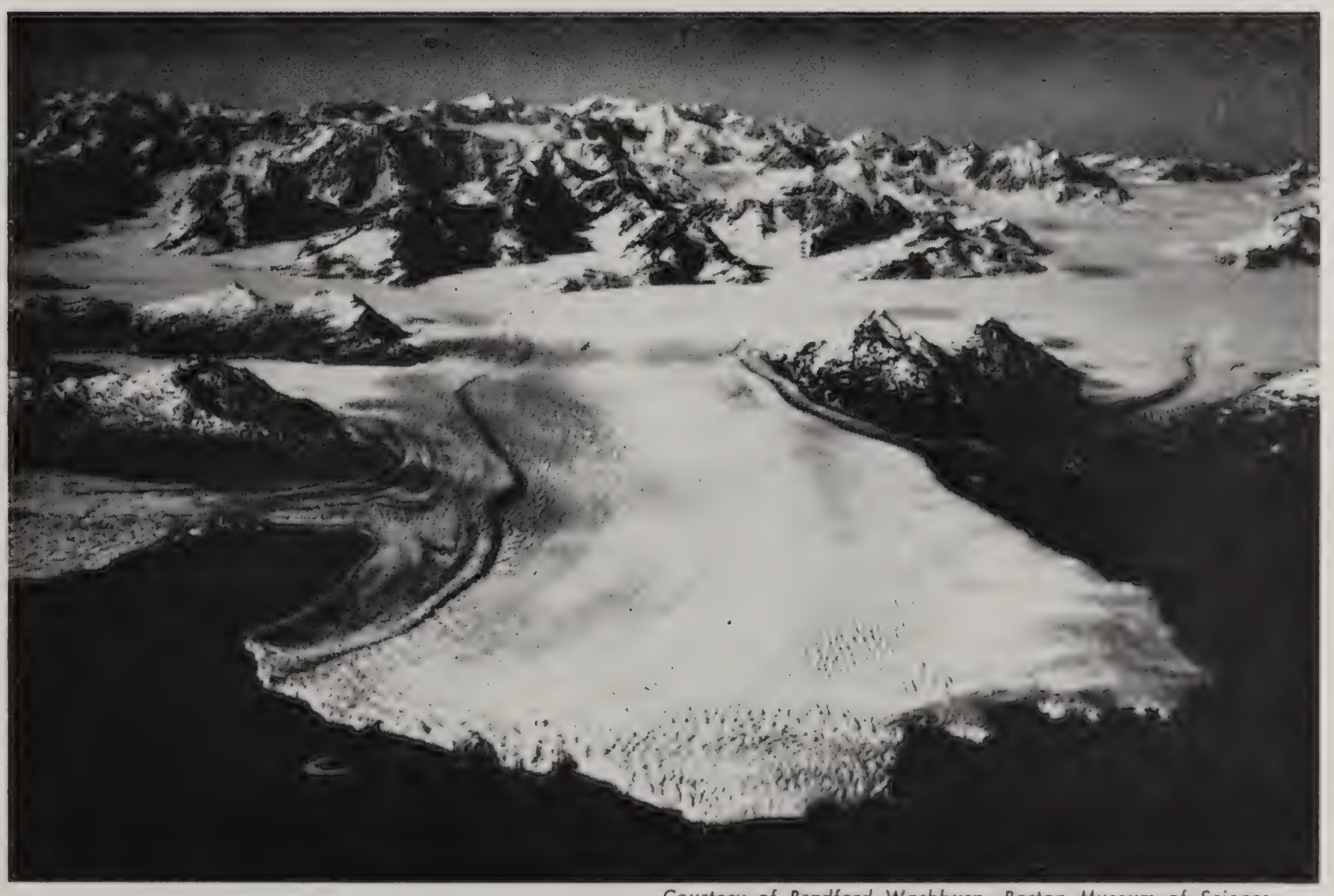
In the bottomlands (Group D soils), Sawmill and Tice tile satisfactorily if good management is practiced to keep the surface soil granulated and porous to water. In Wabash, however, tiling is questionable because of its slow permeability to water. Artificial drainage is not needed on the other soils of this group. Fig. 20

HOW MENARD COUNTY SOILS WERE FORMED

Just as one does not need to be a mechanic to drive an automobile, neither does one have to be a soil specialist to do a good job of farming. However, an understanding of some of the processes at work in the soil will help in planning a wise management program. Following is a brief account of the origin of the parent materials from which Menard county soils were derived, and the ways in which those materials developed into our present soils.

Origin of parent materials. The upland and terrace soils are derived from materials that were laid down during and immediately after the times when great glaciers reached this area. Some of the terrace (benchland) materials have probably been reworked by both wind and water since the earlier period. The bottomland soils have been formed from sediment deposited more recently. Some of them still receive sediments when streams overflow.

Because of climatic changes during the time known as the Glacial Epoch great quantities of snow and ice accumulated in the northern parts of our continent. The pressures developed in this great ice mass caused it to move



Courtesy of Bradford Washburn, Boston Museum of Science

This picture of the Columbia glacier in Alaska illustrates how glaciers form and move. Note that the small valley glaciers in the background have joined together into a large glacier in the foreground. This larger glacier is pushing into Prince William sound. It is approximately 5 miles across at its widest point and about 800 feet thick at its front. Between 200 and 250 feet of ice show above the water. The dark streaks are glacial till imbedded in the ice. This glacier is very small compared with the ice sheets that covered most of Illinois in past ages. Fig. 21

outward, forming glaciers. This movement continued until the glaciers reached a region where the climate was warm enough to melt the ice as rapidly as it advanced. (Fig. 21 shows a small Alaskan glacier which is still active.)

In moving across the country, these sheets of ice picked up masses of rock, gravel, sand, silt and clay, ground them together, and sometimes carried them for hundreds of miles. The moving ice leveled off hills and filled old valleys, often changing completely the features of the surface over which it passed.

Two of the glacial advances contributed materials to Menard county soils. The Illinoian glacier covered the entire county. Long after the Illinoian ice disappeared, the Wisconsin ice sheet, the last great ice movement, approached to within about 15 miles of the northeast corner of the county. This last ice sheet covered the headwaters of Sangamon and Illinois rivers and Salt creek, and as it melted, tremendous quantities of water drained through these streams, depositing sediments along their bottomlands.

Throughout the long period during which the Wisconsin ice sheet was melting there were yearly temperature changes as well as long-time mild and cold stages. Varying quantities of water, therefore, poured down these streams. During the colder spells when the melting of the ice was checked, the bottoms became dry mud flats. Windstorms then picked up "dust" from these flats, sorting it into particles of different size. Sand particles (the larger ones) were deposited close by and the silt (which is fine) was blown farther away and deposited on the uplands. The silty deposit, called "loess," contains considerable amounts of carbonates of calcium and magnesium. (Fig. 22 shows how a windstorm picks up "dust" from bare, dry fields.)

How the soils were developed. As soon as the parent materials from which our soils were derived were laid down, they were subjected to various weathering forces, and soil development began. When first deposited, these parent mate-

Loess in the making. The upland soils of Menard county owe their productiveness largely to the silty wind-blown material, called loess, deposited during and near the close of the ice age by dust storms like this one. The Illinois and Sangamon river flood plains were the sources of most of the loess in the upland of Menard county. *(This picture was taken in Texas in the spring of 1935 by the U. S. Soil Conservation Service.)* Fig. 22

Menard county has had two different loess blankets, as is shown in this picture of a deep roadside bank. The lower one is reddish-brown and is called the Farmdale loess. The upper one, which is buff-colored or yellowish, is known as the Peorian loess. A horizontal gash in the center of the photograph shows the division between the two loess sheets. Fig. 23

rials were high in lime and the mineral elements of plant food but were very low in nitrogen. As time elapsed the rain water, the oxygen and carbon dioxide of the air, and the products of decaying plant and animal remains attacked the minerals, leaching out the free lime and changing some of the minerals into clay.

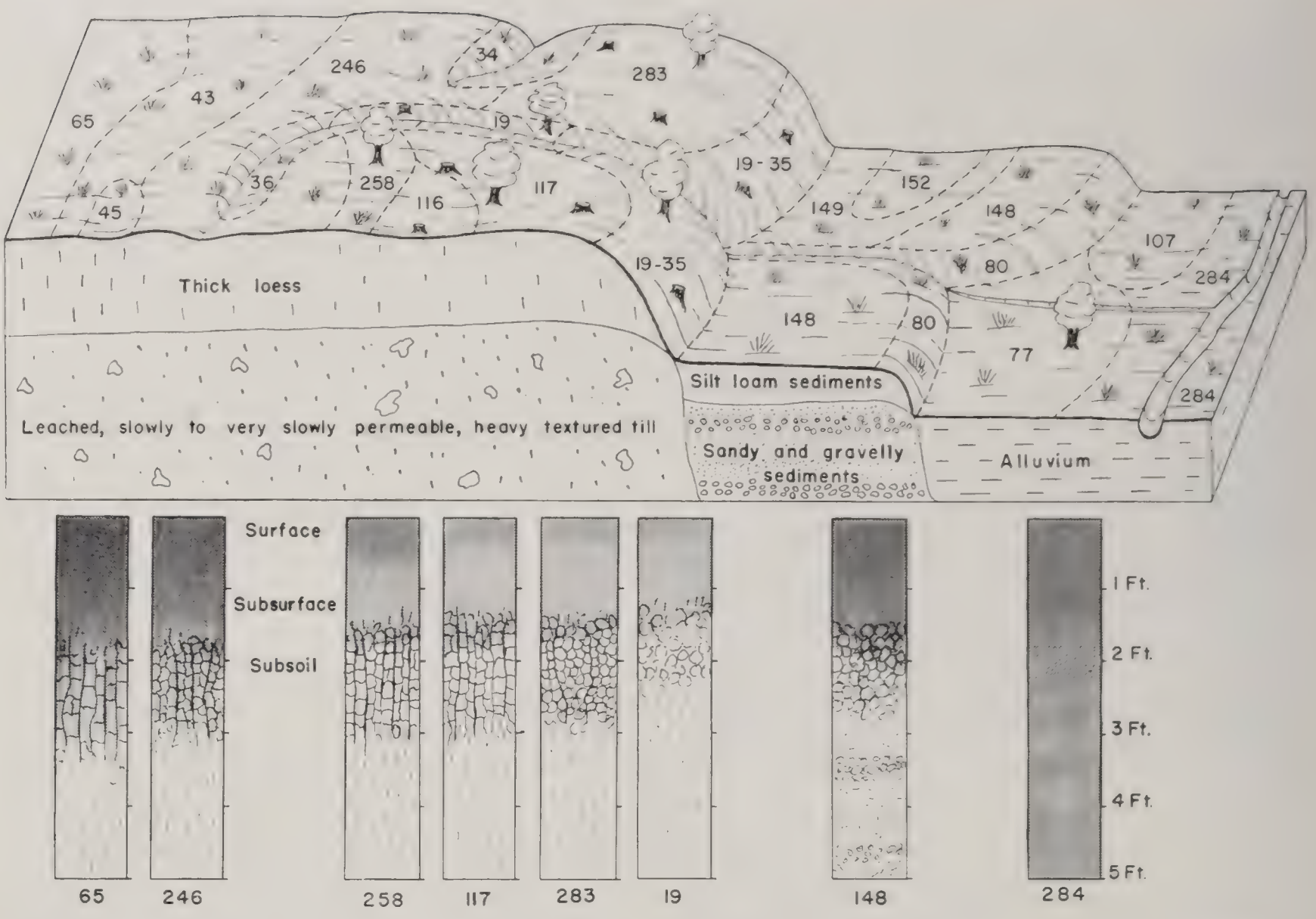
Weathering forces are most active near the surface. Various stages or degrees of weathering therefore occur at different depths. Lime is leached first from the surface, and it is also there that decomposition of the minerals is most active. Most of the organic matter accumulates near the surface. The clay particles that form near the surface are carried down by the percolating water and accumulate in the subsoil along with clay that forms in the subsoil. Thus horizons, or layers, differing in physical and chemical composition are formed, and the parent material acquires the characteristics of soil.

The kind of vegetation under which the soils of Menard county have developed has influenced markedly the amount of organic matter which they contain. The prairie and swamp grasses, through their extensive fibrous root systems, have added much organic matter to the soil. Forest vegetation, on the other hand, does not add such great amounts of organic matter. This is because trees have a coarser root system, and also because leaves and twigs lie on the surface of the ground, where they oxidize readily.

Drainage and the slope of the land surface are responsible for certain other characteristics in a soil. The poorly drained soils in the depressions are gray, although the color may be masked by the darker organic matter. The soils developed under good drainage, on the other hand, are yellowish or reddish, although again the color of the surface horizon may be modified by the organic-matter present.

Each horizon of a soil has more or less definite characteristics. The horizons are designated as *surface*, *subsurface*, and *subsoil* in the soil-type descriptions. The *surface* horizon usually contains the greatest amount of organic matter. The *subsurface* in slightly weathered soils is usually transitional between the surface and subsoil, whereas in highly weathered soils it may be a bleached gray layer low in plant nutrients and organic matter. The *subsoil* usually contains the greatest amounts of clay, particularly in soils that have undergone considerable weathering.

All these zones, or horizons, taken together make up the "soil profile." Differences in the arrangement, color, and thickness of the various zones, or in any



Type No.	Type name	Percent slope	Type No.	Type name	Percent slope
65	Illiopolis silty clay loam	0-0.5	19	Sylvan silt loam	7-30
43	Ipava silt loam	0.5-1.5	19-35	Sylvan silt loam and Bold silt loam undifferentiated	6-30+
45	Denny silt loam	0-0.5	152	Drummer silty clay loam	0-0.5
246	Bolivia silt loam	1-4	149	Brenton silt loam	0.5-1.5
36	Tama silt loam	1-12	148	Proctor silt loam	0.5-4
34	Tallula silt loam	4-12	80	Alexis silt loam	1-7
258	Sicily silt loam	1.5-4	77	Huntsville silt loam, bottom	0.5-1.5
116	Whitson silt loam	0.5-1.5	107	Sawmill silty clay loam, bottom	0-0.5
117	Bogota silt loam	0.5-4	284	Tice silty clay loam, bottom	0-0.5
283	Clary silt loam	2-7			

EFFECT OF TOPOGRAPHY AND NATIVE VEGETATION ON SOIL

The upper part of the above diagram shows how the three main topographic regions of Menard county are related to one another. The uplands are shown on the left of the drawing, the terraces or benchlands in the middle, and the bottomlands on the right. The diagram also shows how various soils within each of the three major topographic levels are related to one another, to the lay of the land, and to the native vegetation. Tufts of grass indicate soils that were formed under grass and other prairie plants. Trees and stumps indicate soils that developed under timber vegetation. A combination of tufts of grass and trees, as on Type 258, indicates that the soils have been influenced by both types of native vegetation.

On the front of the upper part of the diagram are shown the main parent materials (loess, the sediments on the terraces, and alluvium) from which the soils developed.

The panels in the lower part of the diagram show profiles of some of the soils. The coloring of the top part of the panels indicates differences in organic matter content of the surface horizons — the darker the shading, the greater the amount of organic matter. Varying degrees of subsoil structure are shown near the center of the panels. Rounded structure particles as in 246, 283, and 148 are usually most desirable.

Tice (284), like the other bottomland soils, has undergone little development and is about the same in color and texture as when the material was laid down. Fig. 24

of their physical features or in their chemical content, are the bases upon which soil types are differentiated and the soil map constructed.

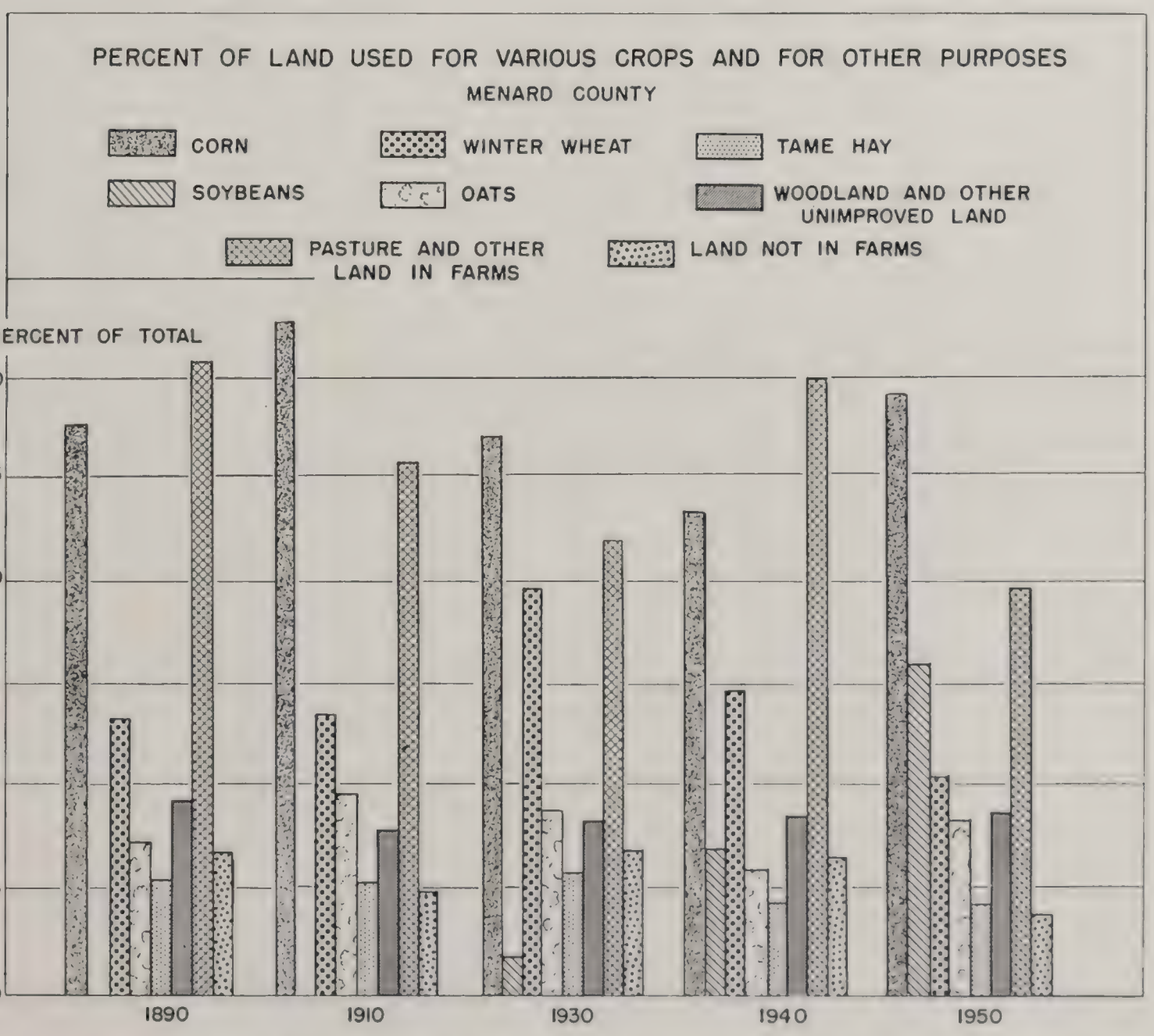
Variations in the soils of Menard county thus trace back to differences in parent materials, in native vegetation, and in drainage conditions during their development as influenced by topography. The relationships of the main soils in the county to these factors of soil development are shown in Fig. 24.

AGRICULTURAL PRODUCTION AND CLIMATE

Crop acreages and livestock numbers. Menard county is mainly agricultural. According to U.S. Census data, nearly 95 percent of the total area of the county has been in farms since 1890.

The nearly level to gently sloping upland areas, which lie between 550 and 640 feet above sea level, are used mainly for corn, soybeans, winter wheat, and oats, as are also the terrace soils. The more rolling upland areas adjacent to streams are used mainly for pasture, hay, and woodland. Bottomlands are used mostly for corn and soybeans.

The percentages of land in Menard county used for various crops and other purposes are given in Fig. 25. The acreage in corn and oats has remained fairly

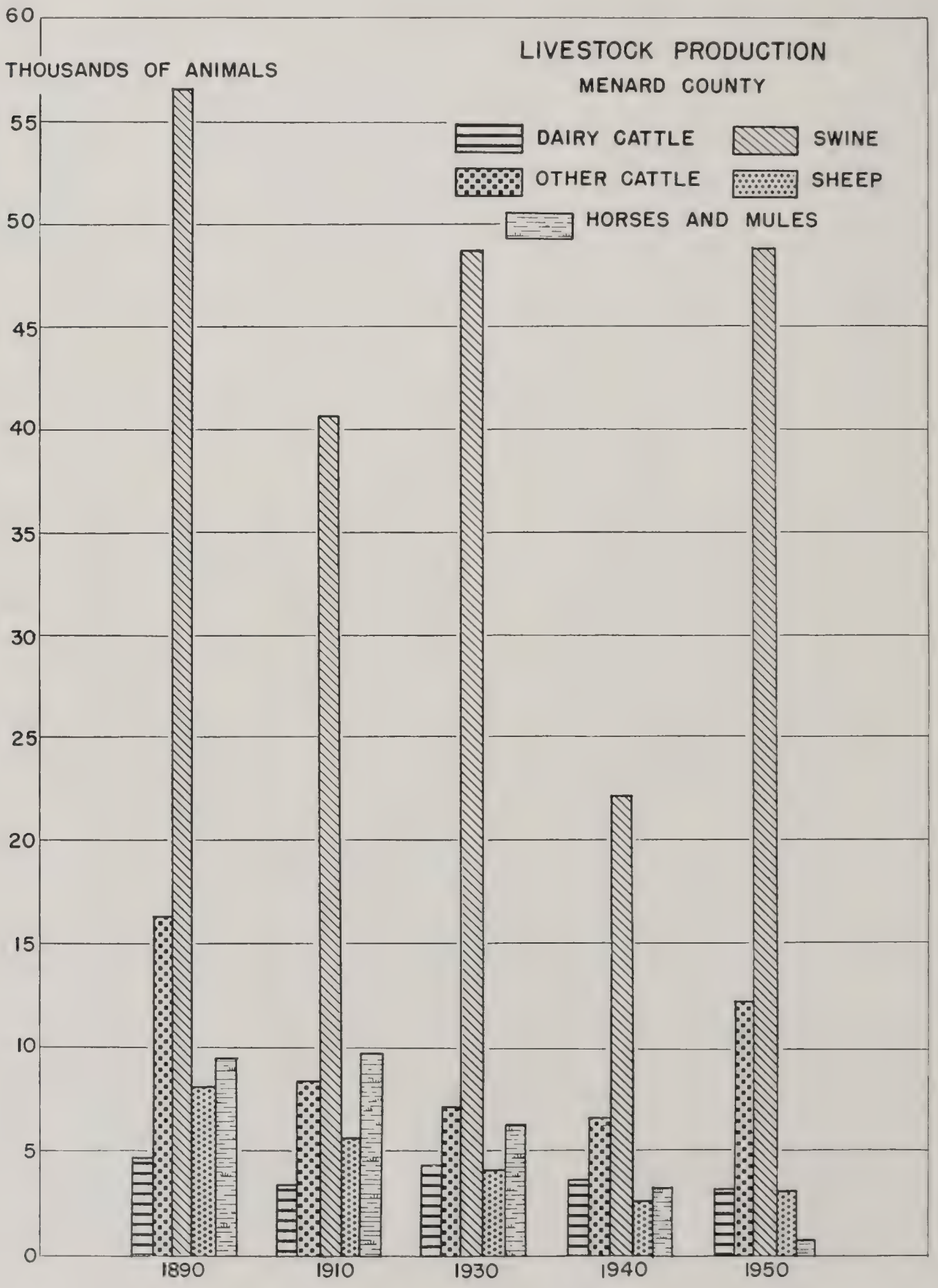


The percentage of land in corn and oats has remained fairly constant over the years whereas winter wheat has shown a steady decline from a peak in 1930. Soybean acreage has increased markedly since 1930. Note also the relatively high percentage of "pasture and other land in farms." Fig. 25

constant over the years whereas winter wheat has declined from a peak in 1930. Soybean acreage, on the other hand, has increased many times since 1930.

Livestock production is substantial, although there has been a decline in the number of animals in Menard county since 1890 (Fig. 26). Swine and "other" cattle numbers were at their lowest in 1940 but showed a marked rise in 1950.

Climate. Data from the Springfield weather station over a period from 1879 through 1946 show that for the Menard county area the mean July temperature was 77.5°F. and the mean January temperature was 27.6°F. The average date



A marked increase in the numbers of swine and beef cattle in 1950 as compared to 1940 is noteworthy in this graph. Fig. 26

of the last killing frost in the spring was April 15 and the average date of the first killing frost in the fall was October 19. Thus the average growing season was 187 days.

The average annual rainfall was 36 inches, with a low of 22.76 inches in 1914 and a high of 58.21 inches in 1882. Average snowfall was 20 inches. The average rainfall from 1926 through 1946 during the growing season, April through September, was 21.33 inches, with a low of 12.32 inches in 1930 and a high of 35.70 inches in 1926.

MEANINGS OF SOME TECHNICAL TERMS

Alluvial sediment — particles of matter of different size carried by running water and left on the flood plains.

Calcareous — said of soils containing enough limestone to effervesce, or bubble, when dilute hydrochloric (muriatic) acid is poured on them.

Compact — said of soils that are difficult to penetrate, being made up of particles closely packed and sometimes weakly cemented together.

Concretions — small hard nodules, or lumps, of mixed composition, shapes, and coloring (limestone concretions and dark rounded pellets of iron-manganese are common).

Depressional — said of soils that occur in low-lying areas that have either no surface outlets for the water that accumulates or only poorly developed outlets.

Drift — *see* Glacial drift.

Free lime — naturally calcareous (see calcareous above).

Friable — easily crumbled or crushed in the fingers; a desirable physical condition in soils.

Glacial drift — any material carried by the ice or waters of glaciers and deposited either as layers of particles sorted by size or as mixed materials.

Glacial till — mixed materials deposited by glacial ice and not laid down in layers.

Horizon — *see* Soil horizon.

Leached — dissolved and washed out of or down through the soil. This has happened with the more soluble materials, such as limestone.

Leguminous — a term applied to plants that, through bacteria on their roots, have the power to take nitrogen from the air.

Loess — fine dust or silty material transported by the wind and deposited on the land. In the Midwest the loess is largely of glacial origin. The grinding action of the glacial ice reduced great quantities of rocks to "rock flour." This fine material was, for the most part, deposited as sediment by glacial streams in their flood stage. Later, during dry periods, it was picked up by the wind and deposited on the surrounding areas.

Manure (livestock) system — a system of farming (used on University of Illinois soil experiment fields) which makes use of animal manure, including litter, which is plowed down for corn in amounts equal to the dry weight of grain and roughage removed during the previous rotation.

Mapping unit — as used here a mapping unit is a *soil type,* of limited *slope* range and of limited range in *thickness of remaining surface and subsurface soil,* having a large enough area to be shown on the soil map.

Neutral — a neutral soil is one that has neither an acid nor an alkaline reaction.

Outwash, glacial outwash — sediment, often sandy and gravelly, deposited in layers in valleys or on plains by water from a melting glacier.

Parent materials — materials such as sand, silt, or clay from which soils develop.

Percent slope — the slant or gradient of a slope stated in percent; for example, a 15-percent slope is a slope that changes 15 feet in elevation for each 100 feet horizontal distance.

Plastic — said of soils that, when moist, are capable of being molded or modeled without breaking up; an undesirable condition, the opposite of friable.

Plowsole — a dense, compacted layer of soil just beneath the surface which interferes with root penetration and the movement of air and moisture.

Profile — *see* Soil profile.

Residue (grain) system — a system of farming (used on University of Illinois soil experiment fields) in which the cornstalks, grain and soybean straw, second crop of legume hay, and leguminous green manure are plowed under. No animal manure is applied.

Soil complex — two or more soil types that occur together in a more or less regular pattern, and are so intimately associated geographically that they cannot be separated by boundaries on the soil map at the scale used.

Soil horizon — a term used for a natural structural division or layer of soil parallel to the land surface and different in appearance and characteristics from the layers above and below it.

Soil profile — a vertical section of soil through and including all of its horizons.

Structure particles — aggregates of soil particles, such as clods, lumps, or granules.

Till — *see* Glacial till.

Topography — the lay of the land surface; as rolling topography, nearly level topography, etc.

Weathered — disintegrated and decomposed by the action of natural elements, such as air, rain, sunlight, freezing, thawing, etc. Weathered soils are soils that have been leached and more or less strongly changed physically and chemically.

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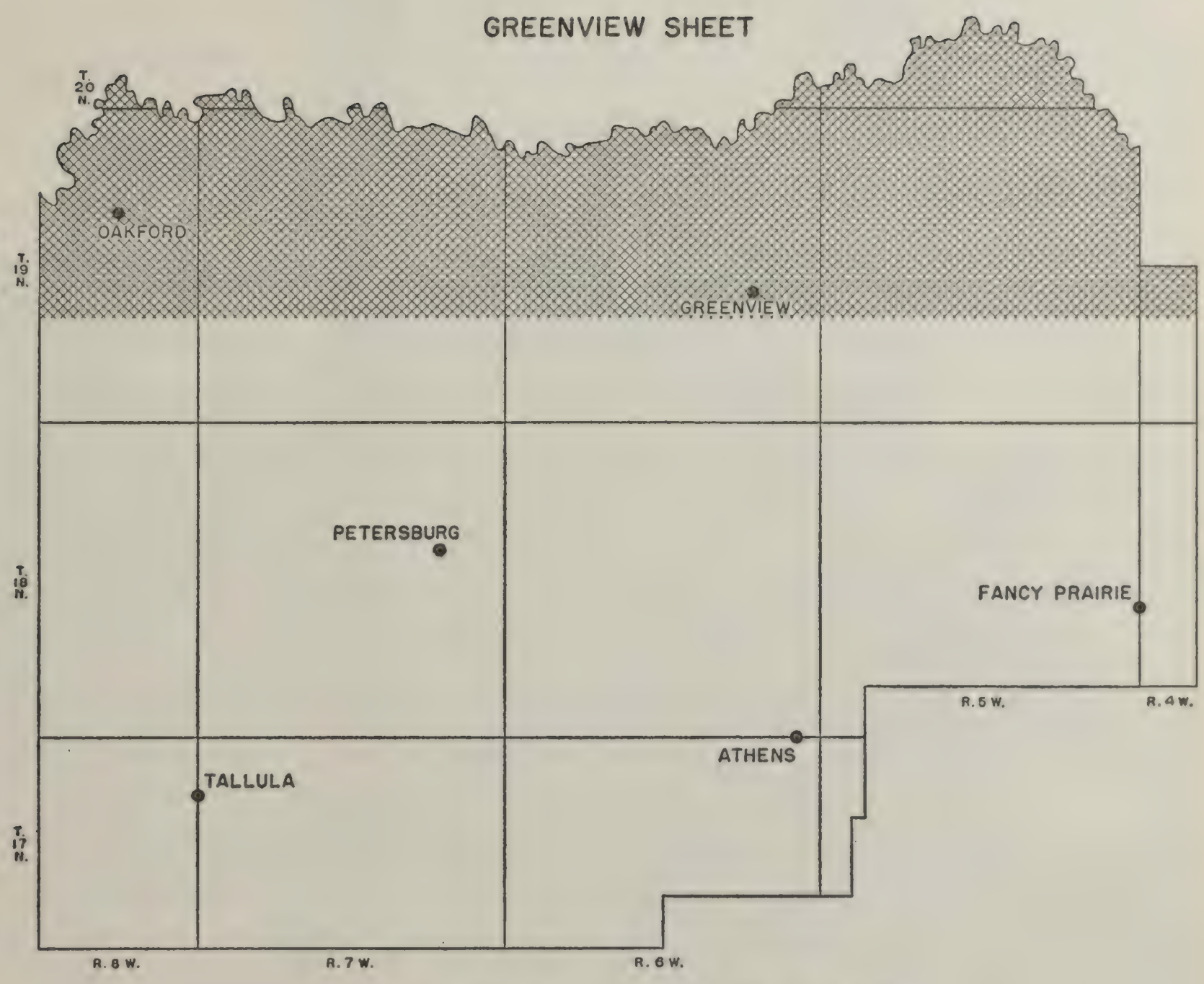
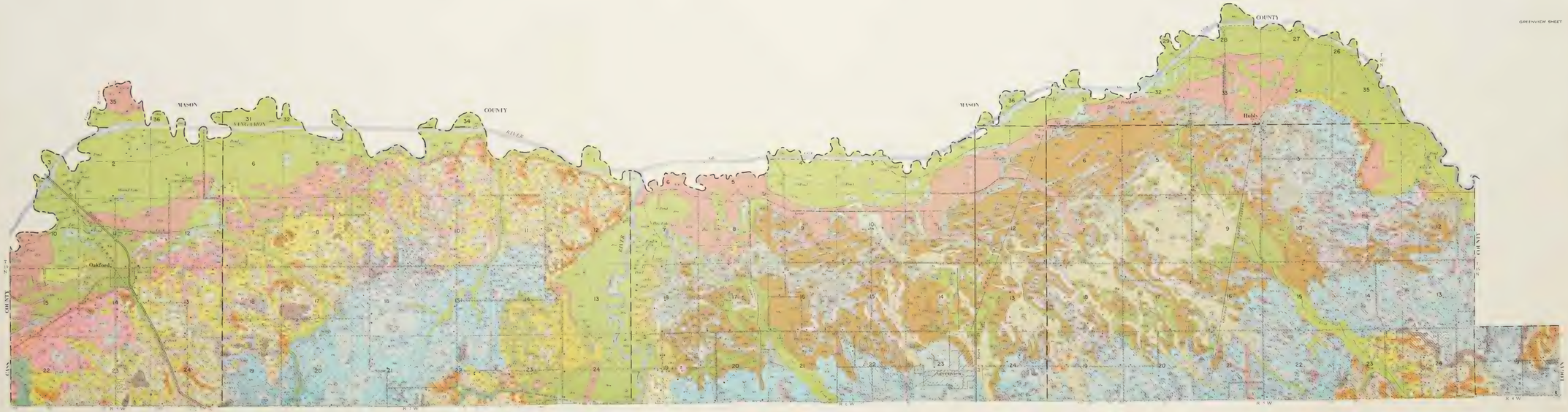


MENARD COUNTY SOIL MAP



GREENVIEW SHEET

LEGEND

4 Hickory loam—Sylvan silt loam, undifferentiated	65-244 Illiopolis silty clay loam—Hartsburg silty clay loam, undifferentiated	132 Muren silt loam
11 Sylvan silt loam	67 Harpster silty clay loam	134 Camden silt loam
19-33 Sylvan silt loam—Bold silt loam, undifferentiated	73 Huntsville loam, bottom	135 Brookston silt loam
24 Jules silt loam, bottom	77 Huntsville silt loam, bottom	138 Proctor silt loam
30 Hamburg silt	78 Arenzville silt loam, bottom	149 Brenton silt loam
34 Tallula silt loam	80 Ayrshi silt loam	150 Ontarga sandy loam
34-35 Tallula silt loam—Bold silt loam, undifferentiated	80-86 Alvin silt loam—Hapener loamy sand, undifferentiated	152 Drummer-Aud silt loam
36 Tama silt loam	81 Lawson silt loam	154 Ritta fine sandy loam
37 Worthen silt loam	83 Wabash silty clay, bottom	155 Kirkland fine sandy loam
43 Sparta silt loam	87 Sumner sandy loam	165 Thorp silt loam
45 Denny silt loam	88 Hagener loamy sand	166 Bryce silt loam
53 Bloomfield fine sand	107 Sawmill silty clay loam, bottom	202 Clarksdale silt loam
54 Plainfield sand	128 Wilbeson silt loam	204 Sidell silt loam
65 Illiopolis silty clay loam	131 Hogana silt loam	205 Ogden silt loam
Underlain by sandy material at a depth of 3 to 6 feet	Slope symbol alone (for example, c)—None to slightly eroded (over 6 inches of surface and subsurface soil remaining)	254 Tice fine sandy loam, deep
a 0 to 1.5% Slope	Slope symbol overscored (for example, $\bar{c}$)—Moderately eroded (2 to 6 inches of surface and subsurface soil remaining)	House
b 1.5 to 4% Slope		County boundary
c 4 to 7% Slope		Property boundary
d 7 to 12% Slope	Slope symbol underscored (for example, $\underline{c}$)—Severely eroded (less than 2 inches of surface and subsurface soil remaining)	Cliff or Bluff
e 12 to 18% Slope	Levee	Limestone Quarry
f 18 to 30% Slope	Paved road (two lane)	Mine Dump
g Over 30% Slope	Graveled road	Undistinguished Intermittent Stream
School	Oiled road	Undistinguished Perennial Stream
Church	Improved dirt road	Fishing streams
Filling station, store	Secondary dirt and private road	Marsh
Cemetery		Pond
Railroad		

Scale
1
0 1 2 Miles

1925

R. S. Smith, in charge of Soil Survey
University of Illinois Agricultural Experiment Station

G. D. Smith, Soil Correlator
United States Department of Agriculture

Soils Surveyed by
J. J. Lindsay, J. Hoge, M. M. Mortland, E. W. Ka[illegible], H. H. Bartelli, Assistants
University of Illinois Agricultural Experiment Station, and
M. B. McGarry, Soil Conservationist
United States Department of Agriculture

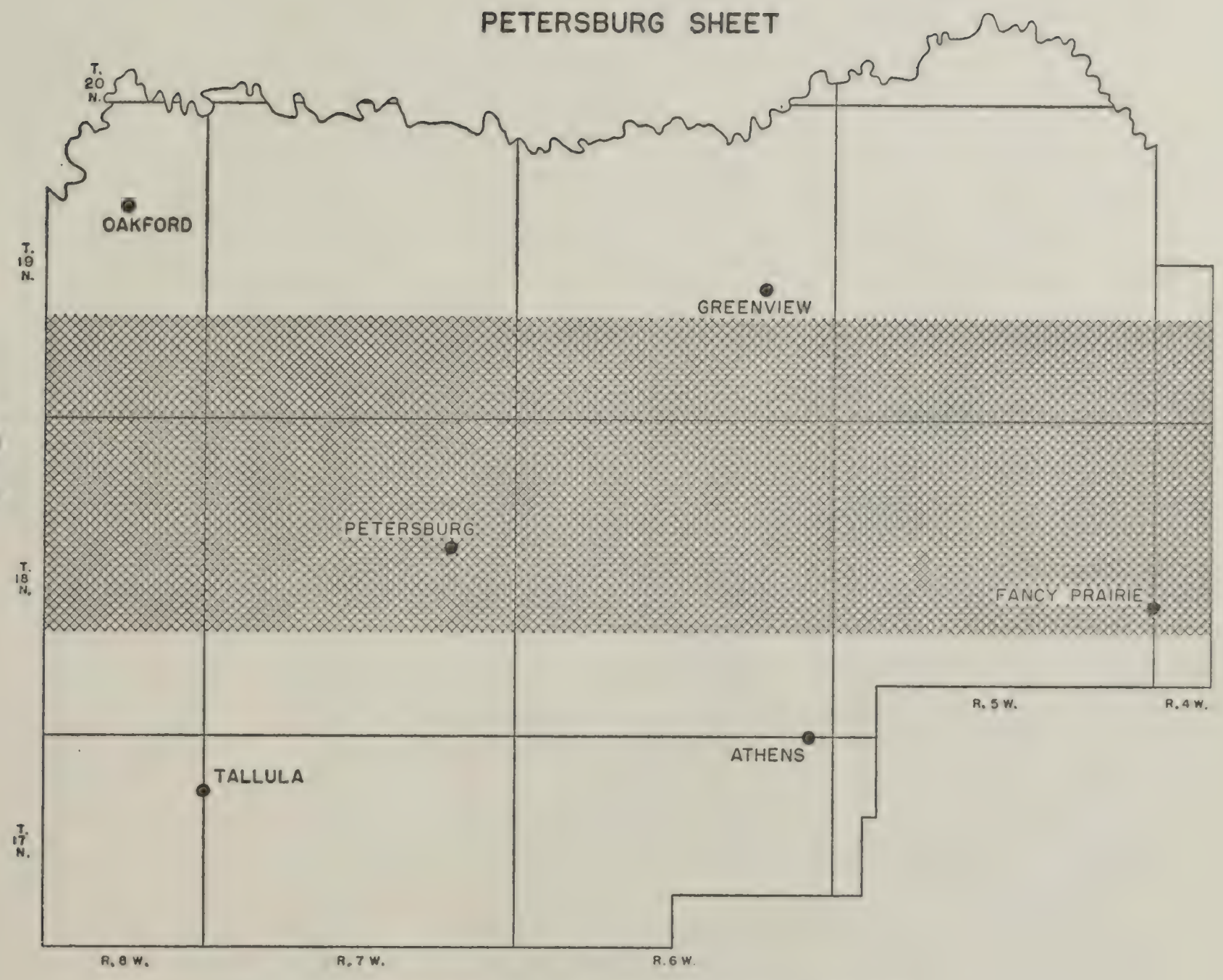
SOIL SURVEY MAP OF MENARD COUNTY, ILLINOIS

UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION

in cooperation with

UNITED STATES DEPARTMENT OF AGRICULTURE

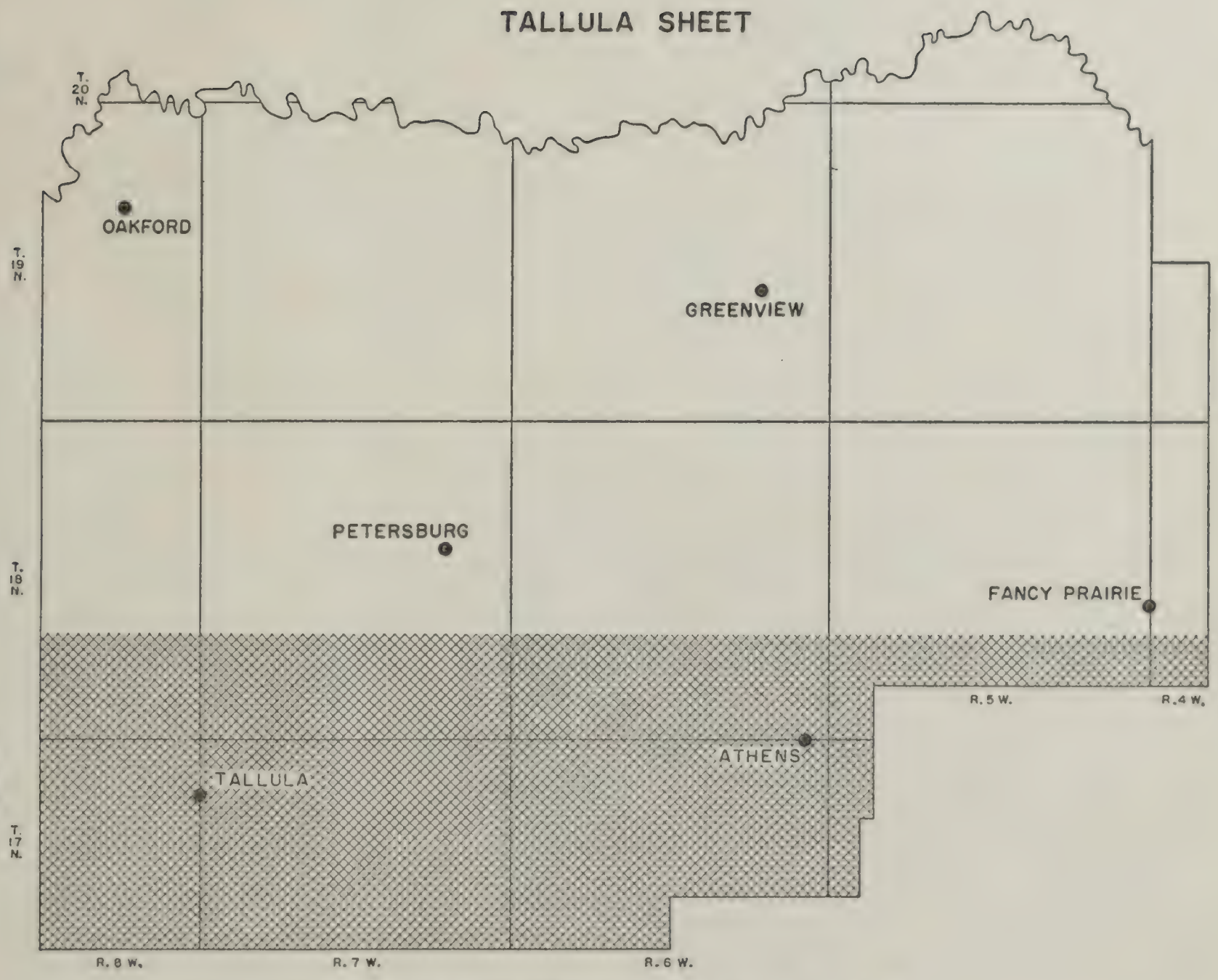
SOIL CONSERVATION SERVICE AND BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING



MENARD COUNTY SOIL MAP

R. 5 W.
R. 4 W.
T. 19 N.
T. 18 N.
Menard
Petersburg
Oakland
Athens
Chautauqua Park
Cotton
Corinth
Sweet Water
Calvert
Fancy Prairie
Credit
Salisbury
Sand
Sand Creek
Spring Creek
Sugar Creek
Salisbury Creek
Indian Creek
Clary Creek
Spring Branch
Lick Creek
Cotton Creek
Sugar Creek
Indian Creek
Salisbury

TALLULA SHEET



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MENARD COUNTY SOIL MAP

LEGEND

9-B Hickory loam—Sylvan silt loam, undifferentiated	65-244 Illiopolis silty clay loam—Martinsburg silty clay loam, undifferentiated	132 Starks silt loam	
13 B Sylvan silt loam	67 Harpster silty clay loam	134 Camden silt loam	
19-13 C Sylvan silt loam—Bold silt loam, undifferentiated	73 Huntsville loam, bottom	136 Q Hosmer silt loam	
28 Jules silt loam, bottom	77 Huntsville silt loam, bottom	148 R Procter silt loam	
30 Hamburg silt	78 Arenzville silt loam, bottom	149 Brenton silt loam	
54 D Tallula silt loam	80 J Alexis silt loam	150 S Onarga sandy loam	
54-33 E Tallula silt loam—Bold silt loam, undifferentiated	80-88 K Alexis silt loam—Hagener loamy sand, undifferentiated	152 Letcher silty clay loam	
56 F Tama silt loam	81 Littleton silt loam	154 T Roby fine sandy loam	
57 Warsaw silt loam	83 Wabash silty clay, bottom	156 U Kinkaid fine sandy loam	
63 G Ipava silt loam	87 V Sumner sandy loam	206 V Thorp silt loam	
65 H Denny silt loam	88 M Hagener loamy sand	240 W Bonnie silt loam	
93 I Bloomfield fine sand	107 Sawmill silty clay loam, bottom	327 X Catlin silt loam	
94 Plainfield sand	118 N Watseka silt loam	330 Y Sicily silt loam	
65 Illiopolis silty clay loam	112 P Dupo silt loam	353 Z Clary silt loam	
Underlain by sandy material at a depth of 3 to 6 feet		354 Tice silty clay loam, bottom	

a 0 to 1.5% Slope
b 1.5 to 4% Slope
c 4 to 7% Slope
d 7 to 12% Slope
e 12 to 18% Slope
f 18 to 30% Slope
g Over 30% Slope
School
Church
Filling station, store
Cemetery
Railroad

Slope symbol alone (for example, c)—None to slightly eroded (over 6 inches of surface and subsurface soil remaining)

Slope symbol overscored (for example, $\bar{c}$)—Moderately eroded (3 to 6 inches of surface and subsurface soil remaining)

Slope symbol underscored (for example, $\underline{c}$)—Severely eroded (less than 3 inches of surface and subsurface soil remaining)

Levee
Paved road (two lane)
Graveled road
Oiled road
Improved dirt road
Secondary dirt and private road

House
County boundary
Township boundary
Grand Pa
Limestone Quarry
Mine Dump
Uncrossable drainageway
Crossable drainageway
Flowing streams
Swamp
Pond

Scale
1 0 ½ 1 2 Miles

1948

R. S. Smith, in charge of Soil Survey
University of Illinois Agricultural Experiment Station

G. D. Smith, Soil Correlator
United States Department of Agriculture

Soils Surveyed by:
J. B. Fehrenbacher, in charge, M. M. Mortland, B. W. Ray, and R. H. Post, University of Illinois Agricultural Experiment Station, and M. B. Harland, Soil Conservation Service

SOIL SURVEY MAP OF MENARD COUNTY, ILLINOIS

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Published Numbers in Soils Report 76	Soil Number and Name as of July 1977
8-19	963-Hickory and Sylvan soils
19	19-Sylvan silt loam
19 (Blue lined)	212-Thebes silt loam
19-35 (Letter. Overscored and underscored)	19-Sylvan silt loam
19-35 (Blue lines)	212-Thebes silty clay loam
[redacted]	
28	28-Jules silt loam
30	30-Hamburg silt loam
34	34-Tallula silt loam
34-35. 34.	[redacted]-Tallula[redacted] silt loams
36	36-Tama silt loam
36 (Blue lined)	684-Broadwell silt loam
37	37-Worthen silt loam
43	43-Ipava silt loam
43 (Blue lined)	683-Lawndale silt loam
45	45-Denny silt loam
45 (Blue lined)	136-Brooklyn silt loam
53	53-Bloomfield fine sand
54	54-Plainfield sand
65	68-Sable silty clay loam
65-244	244-Hartsburg silty clay loam
67	67-Harpster silty clay loam
73	73-Ross loam
77	77-Huntsville silt loam
78	78-Arenzville silt loam
80 148.	[redacted]-Proctor silt loam
81	81-Littleton silt loam
83	83-Wabash silty loam
87	87-Dickinson sandy loam
88	88-Sparta loamy sand
107.	107-Sawmill silty clay loam
116.	17-Keomah silt loam
117.	18-Clinton silt loam
117 (Blue lined)	685-Middletown silt loam
132.	132-Starks silt loam
134.	134-Camden silt loam
136.	136-Brooklyn silt loam
148.	148-Proctor silt loam
149.	149-Brenton silt loam
150.	150-Onarga sandy loam
152.	152-Drummer silty clay loam
184.	184-Roby fine sandy loam
186.	131-Alvin fine sandy loam
206.	206-Thorp silt loam
246.	36-Tama silt loam
246 (Blue lined)	684-Broadwell silt loam
257.	257-Clarksdale silt loam
258.	36-Tama silt loam
258 (Blue lined)	684-Broadwell silt loam
283.	18-Clinton silt loam
283 (Blue lined)	685-Middletown silt loam
284.	284-Tice silty clay loam

MENARD COUNTY SOIL CORRELATION LEGEND

MEMBER COMEX 2017 CONFEDERACIÓN

SOIL REPORTS PUBLISHED

Adams, 24
Bond, 8
Boone, 65
Bureau, 20
Calhoun, 53
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Champaign, 18*
Christian, 73
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Coles, 44
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Effingham, 48
Fayette, 52
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Fulton, 51
Grundy, 26
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Wayne, 49
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Will, 35
Winnebago, 12
Woodford, 36

* No longer available for distribution.
** Reports 74 for Iroquois county and No. 72 for Livingston county replace Nos. 22 and 25 previously published for these two counties.

Much new information about soils has been obtained since the older soil maps and reports in the above list were printed, especially Nos. 1 to 53 issued before 1933. For many areas this newer information is necessary if the maps and other soil information in the reports are to be correctly interpreted. Help in making these interpretations can be obtained by writing Department of Agronomy, University of Illinois, Urbana.

UNIVERSITY OF ILLINOIS-URBANA
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WHAT KINDS OF SOIL OCCUR ON MY FARM?

WHAT TREATMENTS DO MY SOILS NEED TO MAKE THEM YIELD THEIR BEST?

WHAT CROP YIELDS CAN I EXPECT?

These are the questions this Soil Report aims to answer for the farmers and landowners of Menard county. Careful reading will repay all who own or operate farms in this county . . . .